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53
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Drug and Cosmetic Industry

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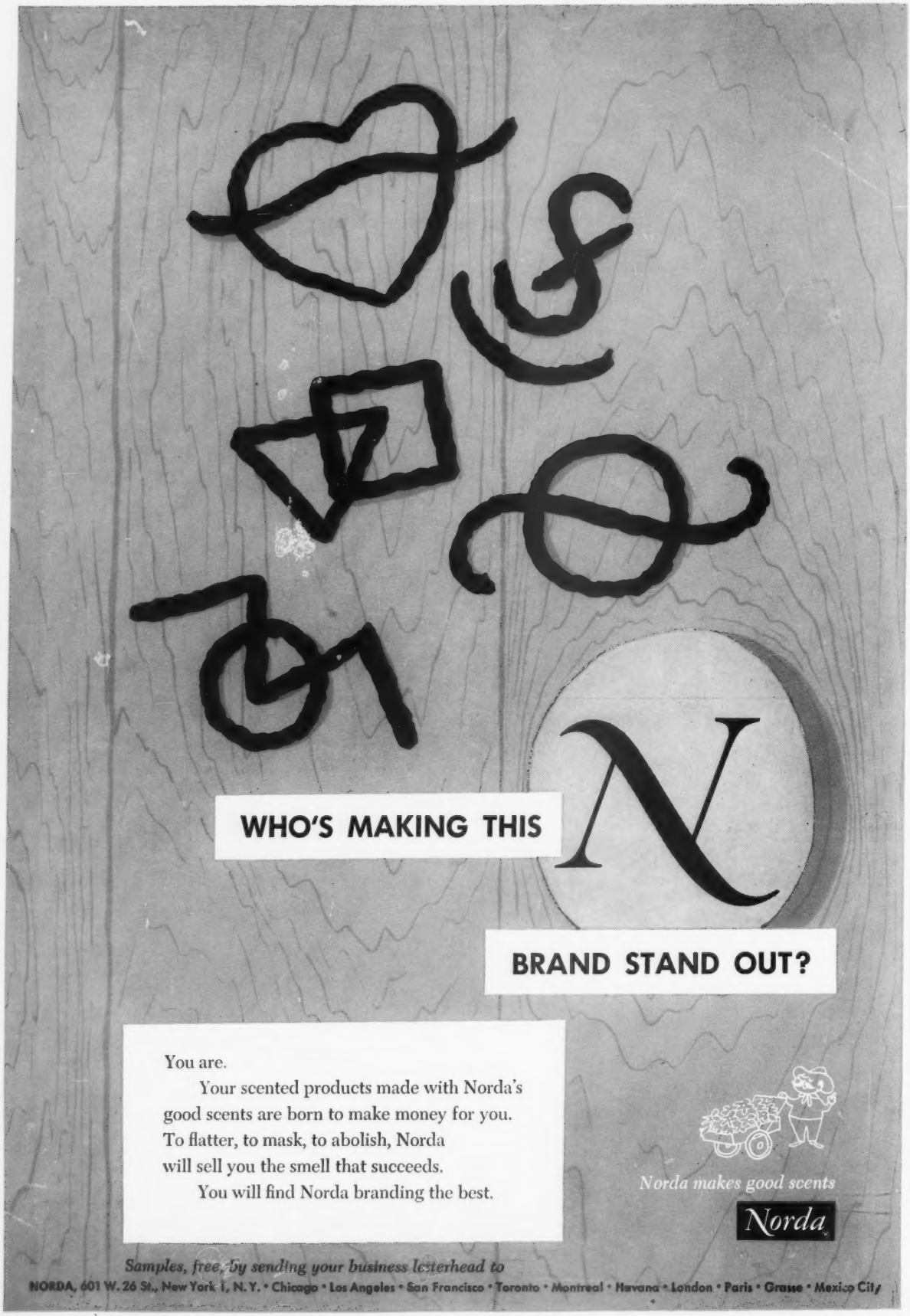
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Laboratory Data Sheet

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Dry vitamin A acetate powders
Dry vitamin A palmitate beadlets

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	Type & Nam.	Usage	Potency (in U.S.P. units per gram)	Additive	Stability	Mesh Size
LIQUID TYPES	**P1MO** Vitamin A palmitate *(liquid)*	In tablets, aqueous dispersions, capsulated products	1,000,000	Edible oil only, for standardization	Excellent	—
	P1MO/BH Vitamin A palmitate *(liquid)*	as above	1,000,000	Edible oil plus anti-oxidants (butylated hydroxyanisole and butylated hydroxy-toluene).	Excellent	—
	P1.3 Vitamin A palmitate *(liquid)*	For oil-free prepara-tions	1,350,000 to 1,450,000	None	Excellent	—
	A1MO Vitamin A acetate *(liquid)*	In oil solutions and gelatin capsules	1,000,000	Edible oil only, for standardization	Excellent	—
BEADLETS	**Type 250-S** Vitamin A palmitate *Dry Beadlets*	Water dispersible. For dry products which will be reconstituted with fluids, such as dry cereals, etc.	250,000	None	Excellent	Essentially 30-80 free-flowing, for uniform distribution in dry mixes.
	Type 500-S Vitamin D_2 *Dry Beadlets*		500,000	None	Excellent	
POWDERS	**Type 325A-32.5D** Vitamin A acetate & Vitamin D_2 *(dry)*	For tablets, capsules, vitamin-fortified powdered supplements	A—325,000 D_2—32,500	None	Excellent	40 and 60
	Type 325 Vitamin A *(dry)*		325,000	None	Excellent	40 and 60
	Type 500 *(dry)* Vitamin A acetate	For dry prepara-tions: tablets, capsules, vitamin-fortified powdered supplements	500,000	None	Excellent	40 and 60
	Type 500A-50D Vitamin A acetate & Vitamin D_2 *(dry)*		A—500,000 D_2—50,000	None	Excellent	40 and 60
SPECIAL	*For research and special production.* Type P1.8/BH (liquid) — vitamin A palmitate; 1.65 to 1.8 million U.S.P. units per gram. Type A2.9 (crystalline) — Vitamin A acetate; 2.8 to 2.9 million U.S.P. units per gram. No oil addition. Antioxidants in Type P1.8/BH: butylated hydroxyanisole and butylated hydroxytoluene. Both types need special handling.			**Packing** All Roche vitamin A is packaged to insure safety in transit and ease of handling in pharmaceutical operations.		

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Drug and Cosmetic Industry

Contents **July 1958 Vol. 83 No. 1**

Cover by Joel

Feature Articles

33 **Cosmetics, Chemicals and Claims**
by George P. Larrick

36 **Steroid Research 2: How to Win At Structural Roulette**
by Norman Applezweig

38 **TGA Meeting**

40 **SCC Mid-Year 1958 Meeting**

42 **Evaluation of the Inhalation Safety of Cosmetics**
by Henry J. Horn, M.D.

44 **Testing and Evaluating Perfume Compounds In Cosmetic Preparations**
by Victor Digiacomo and Walter Wynne

46 **Chemical Interactions Of the Water-Soluble Vitamins**
by Stanley Scheindlin, D.Sc.

Packaging and Selling Section

51 **The "Invisible Sell" And the Pharmaceutical Industry**
by Theodore Klein

55 **Market for Children's Toiletries**

57 **Packaging and Selling**

63 **News in Packaging**

Departments

25 **Keeping Posted**
by Thomas R. Farrell

66 **Patent Thoughts and Trends**
by Thomas Cifelli, Jr.

69 **News**

83 **Management Forum**
by Francis Chilson

97 **Industry's Books**
by Harry G. Kelbly

101 **Trade Literature**

Technical Abstracts

by Joseph Kalish, Ph.D.

90 **Perfumer's Shelf**

93 **Compounder's Corner**

98 **Advancing Therapy**

103 **Skin Research**

107 **Reader's Questions**

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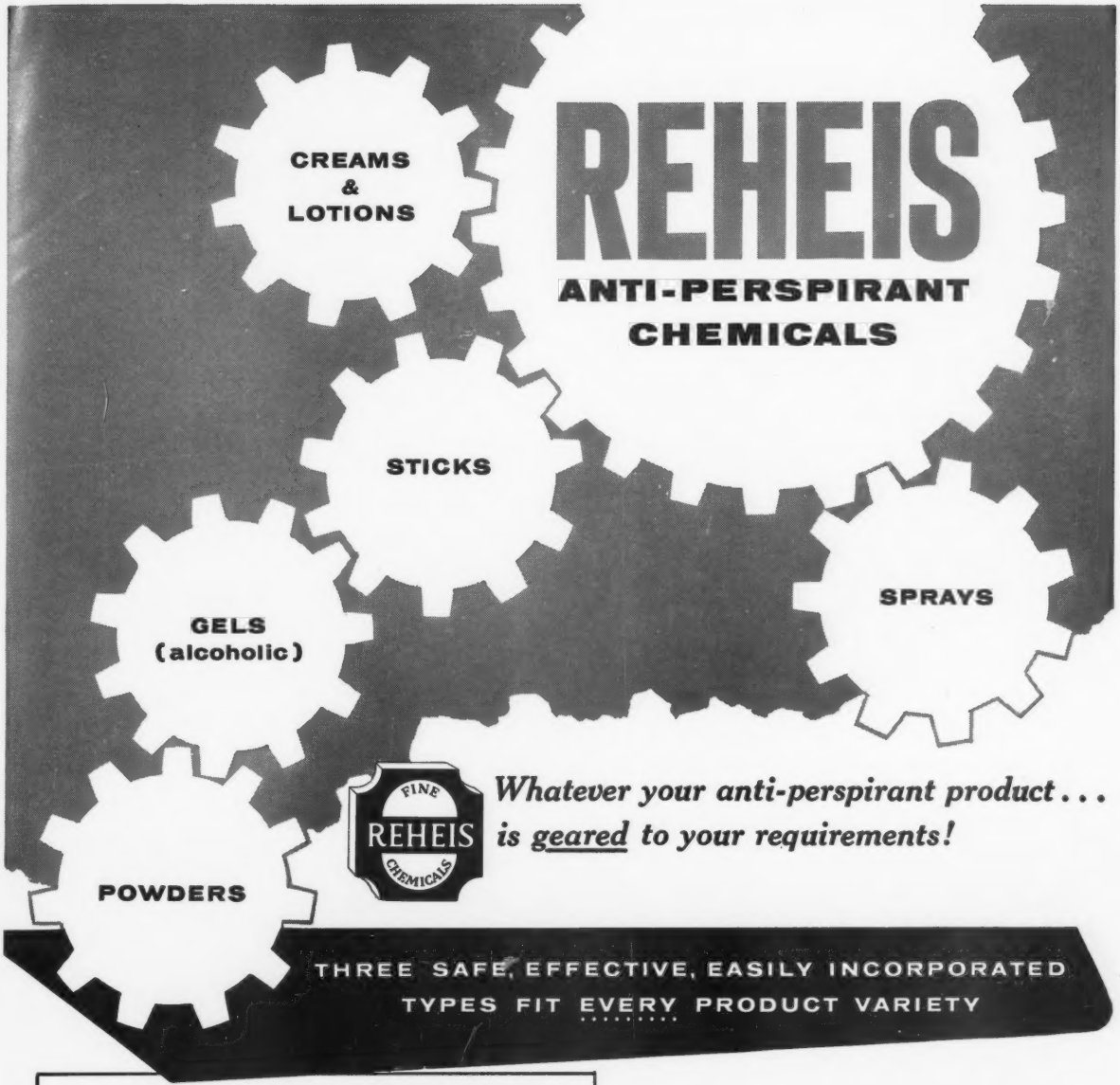

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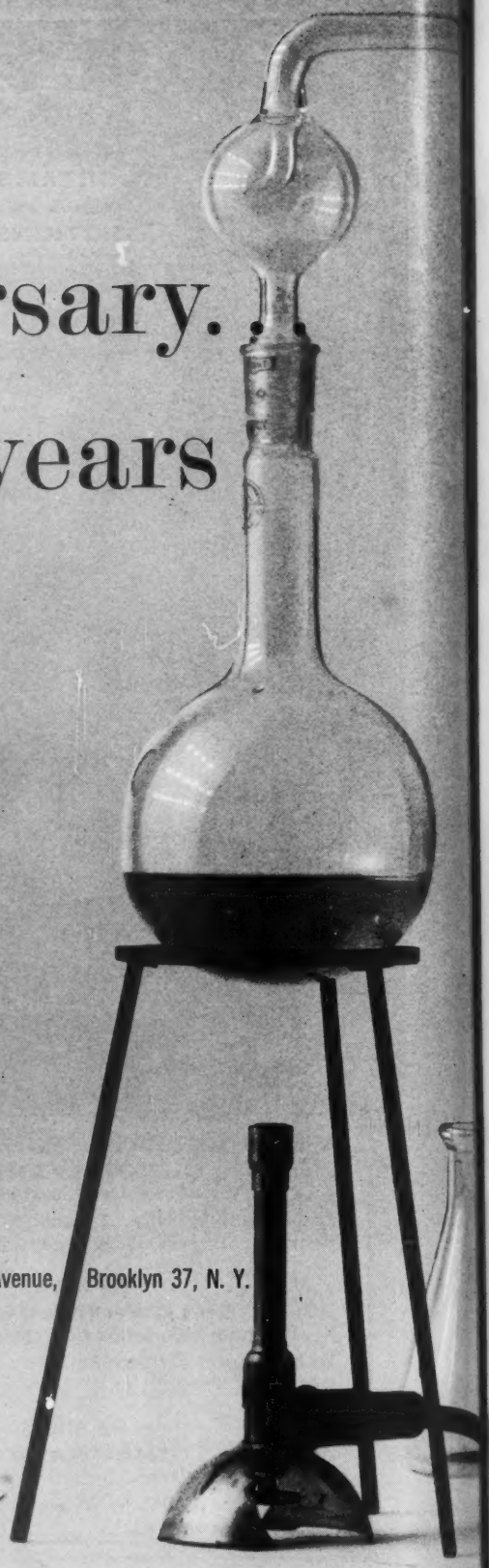

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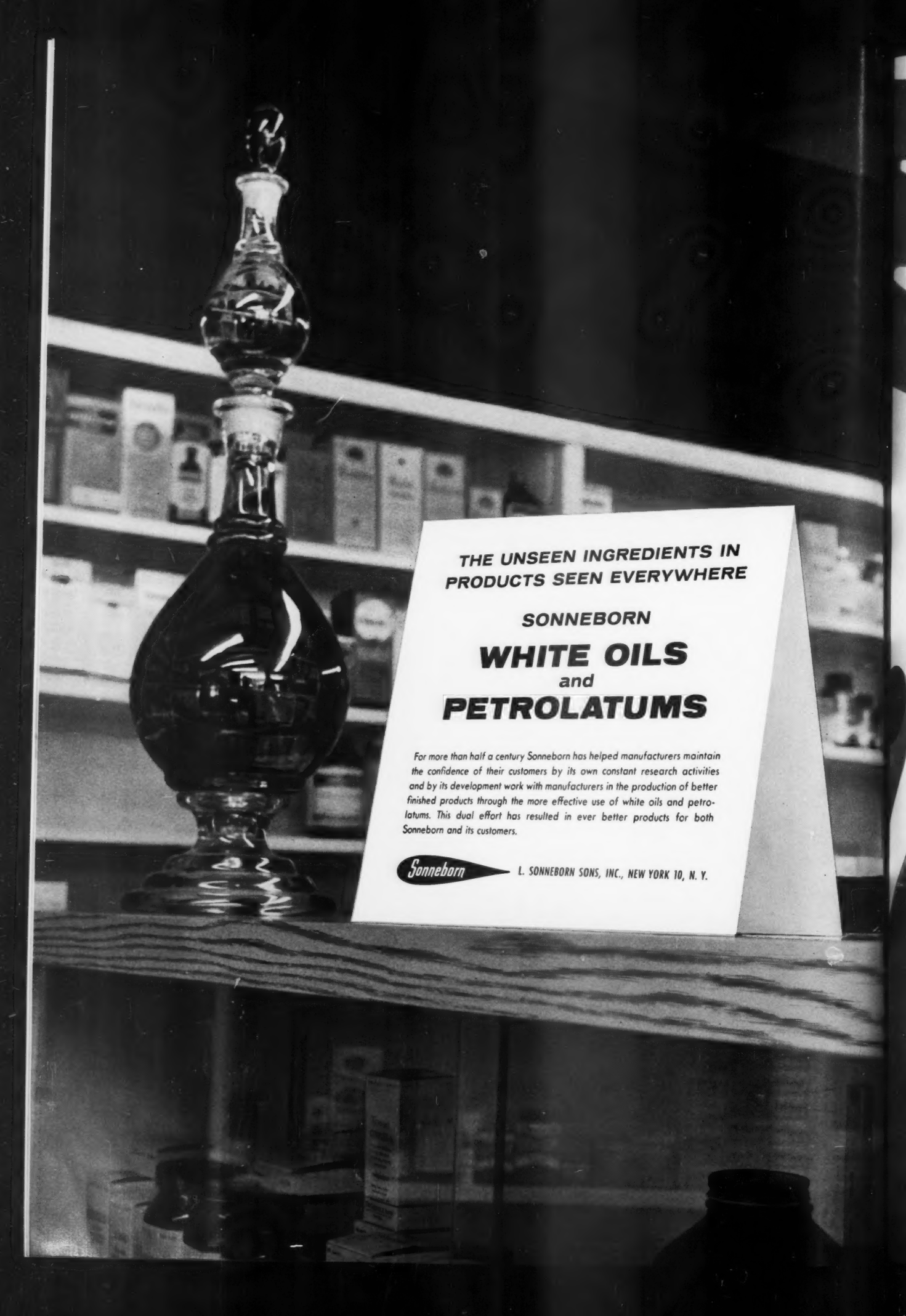
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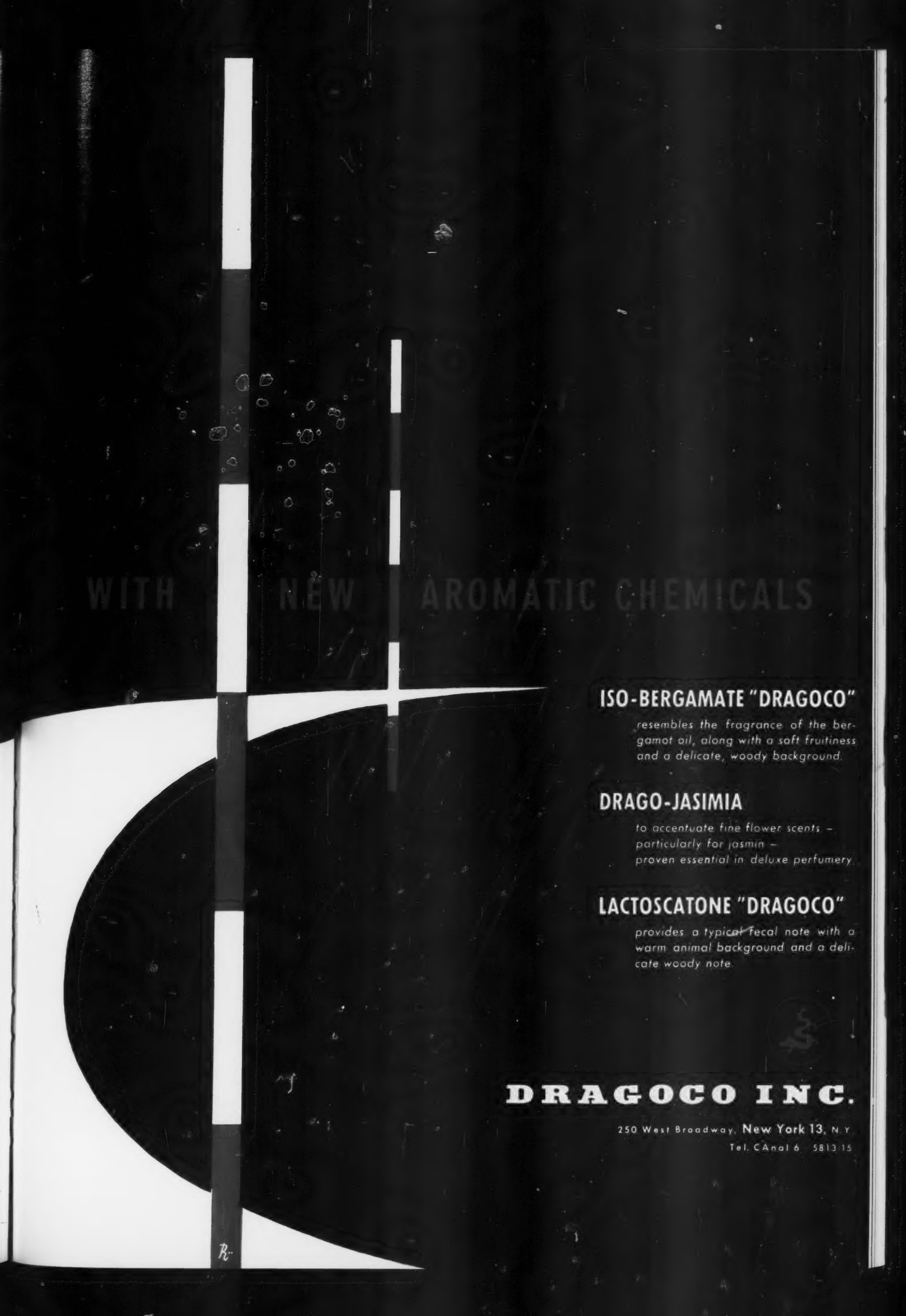
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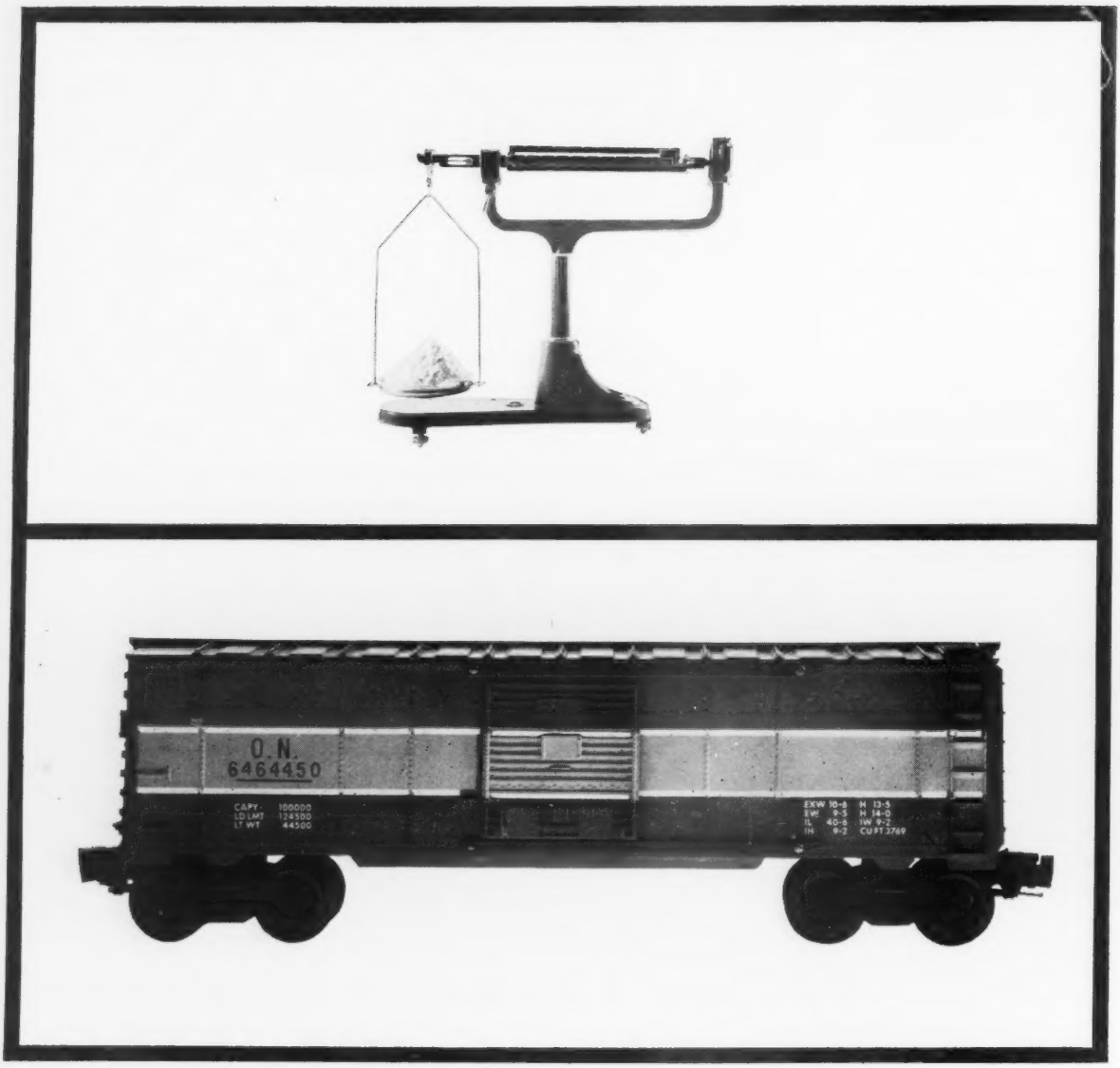

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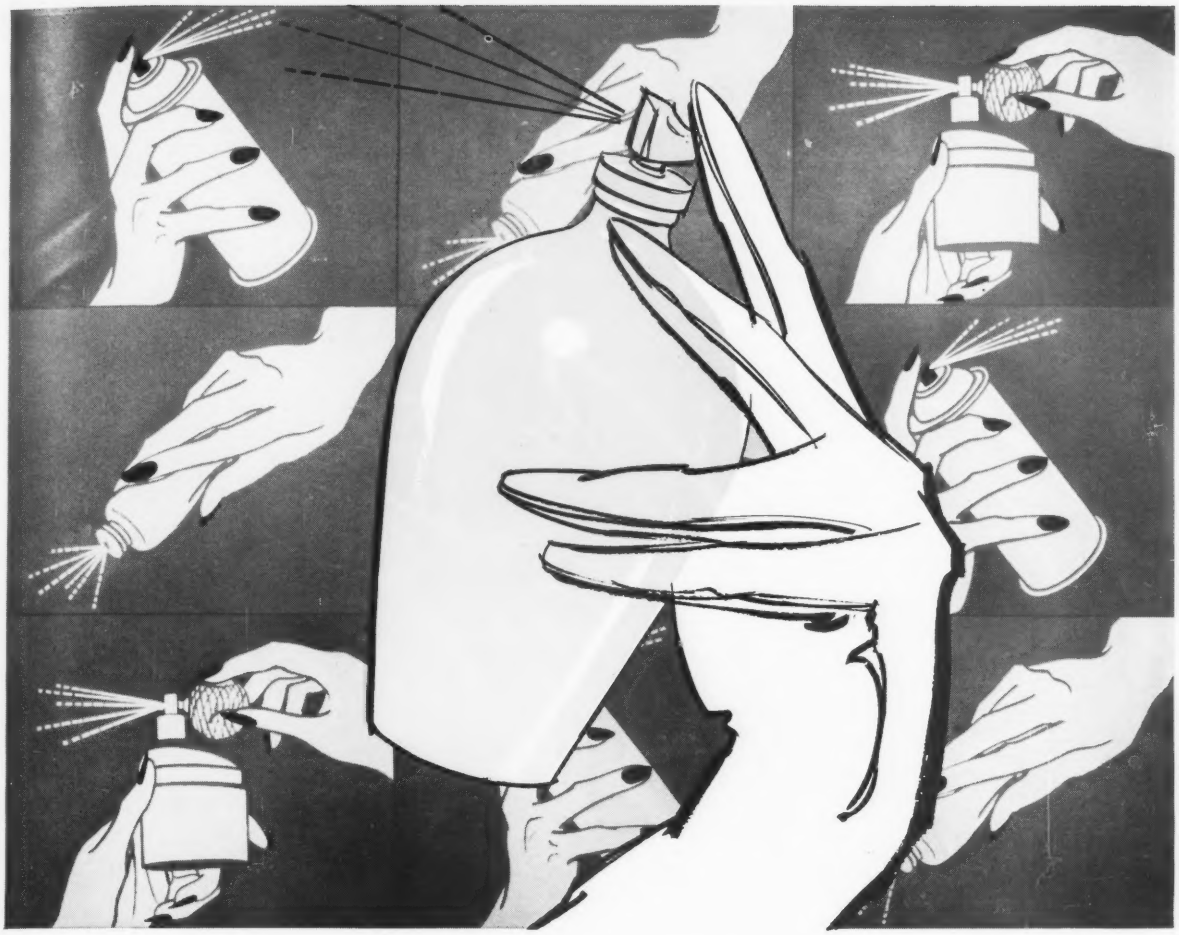

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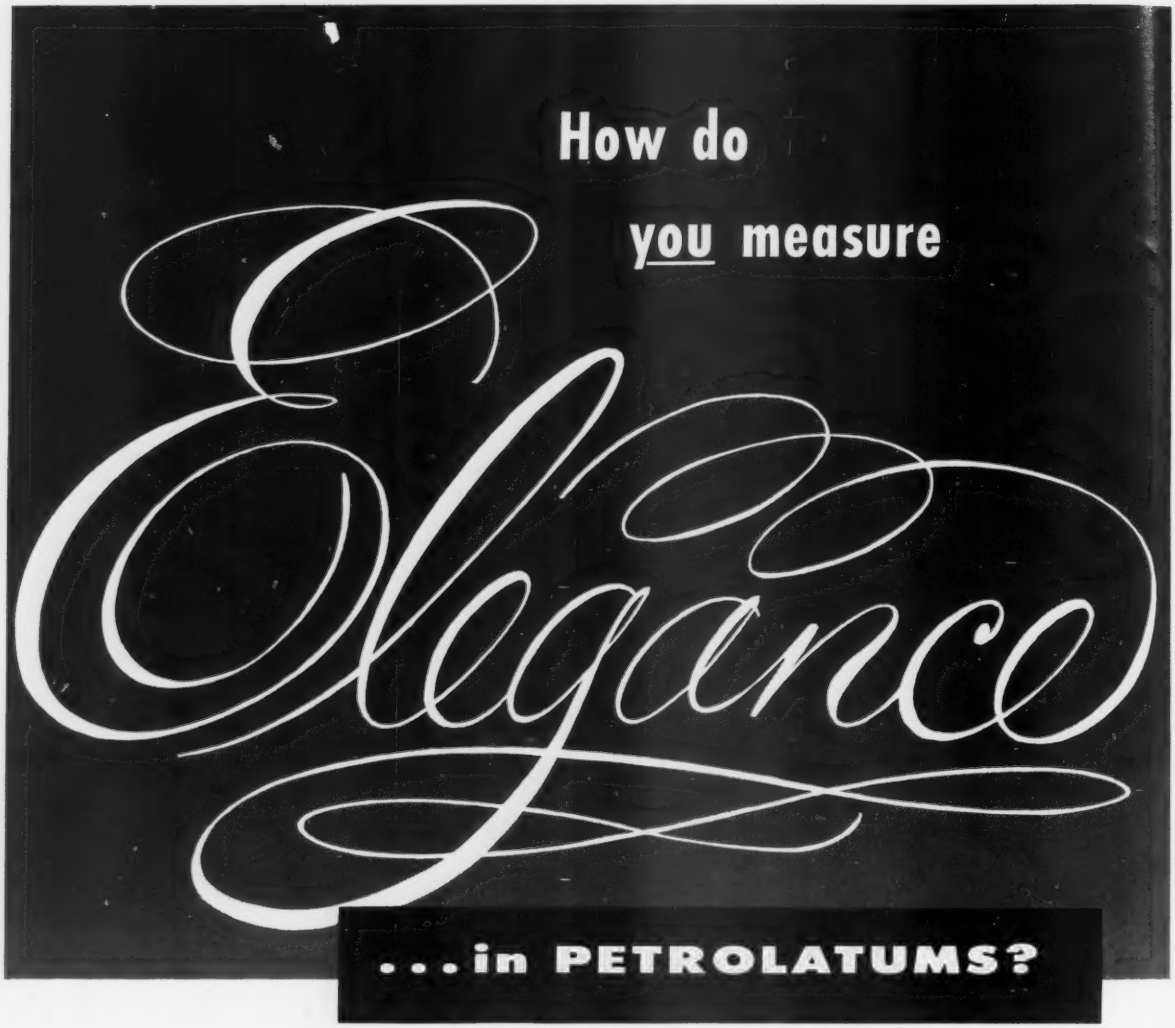

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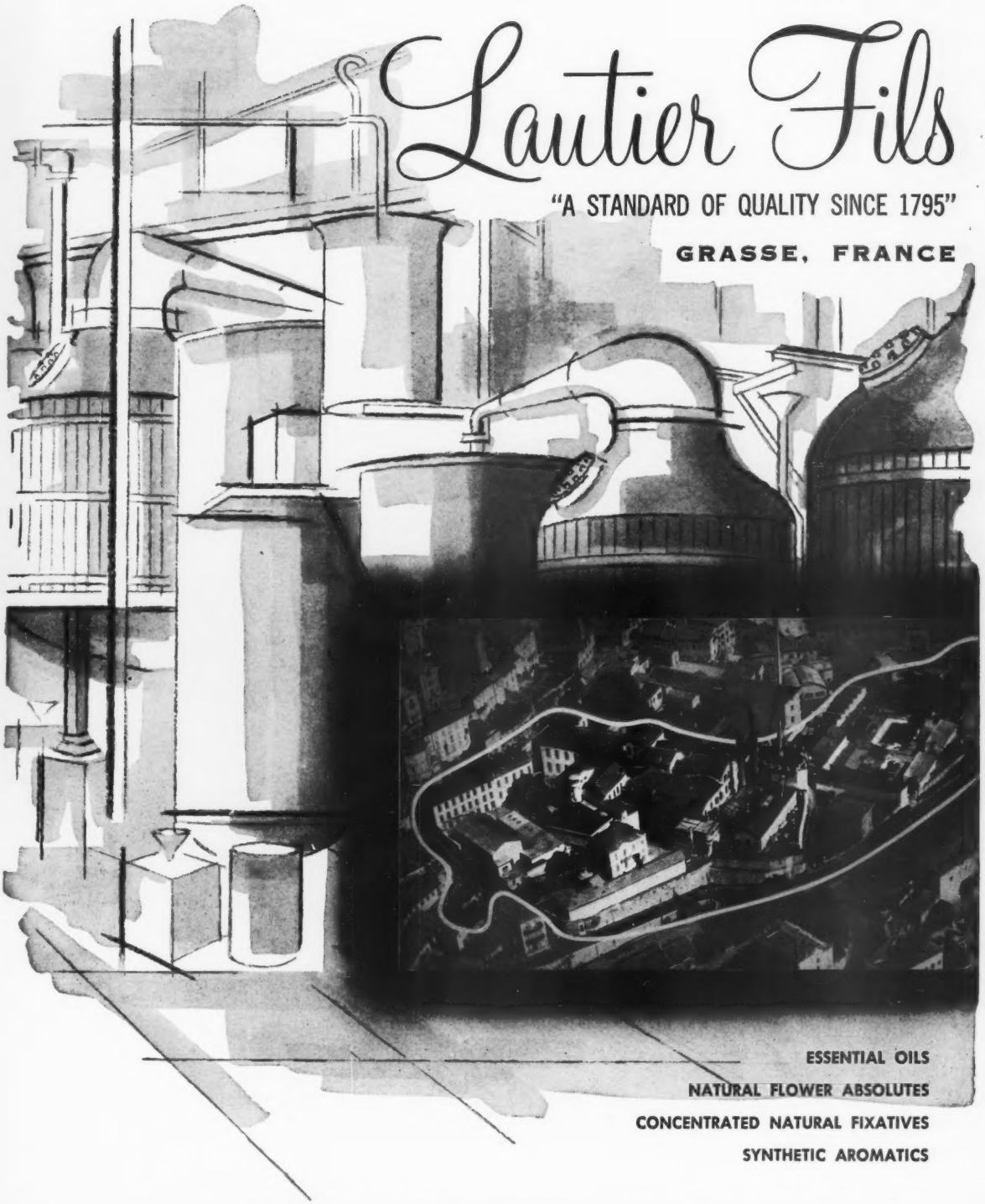

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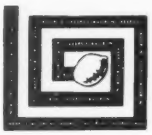
Concentrated Imitation Caramel Flavor	1 oz.
Imitation Tame Cherry Flavor 2:1	2 ozs.
Syntharome Imit. Wild Cherry Flavor Special	1/4 to 1/2 oz.
Imitation Wild Cherry Flavor 2:1	2 ozs.
Imitation Chocolate Aroma Flavor	2 ozs.
Cola Type Flavor 1:1	1/2 to 1 oz.
Cola Type Flavor 4:1	4 ozs.
Concentrated Lemon-Lime Flavor	1/4 to 1/2 oz.
Licorice Type Flavor 1:1	1/2 to 1 oz.
Syntharome Imitation Maplenut Flavor	1/2 oz.
Syntharome Imitation Raspberry Flavor	1/4 to 1/2 oz.
Syntharome Imit. Tutti-Frutti Flavor	1/4 to 1/2 oz.
Imitation Tutti-Frutti Flavor 2:1	2 ozs.
Imitation Rum and Butter Flavor	1/2 oz.

The indicated usages to the gallon of syrup are mentioned purely as indications for test evaluation work in manufacturer's own formulations.

ENTRAPPED POWDERED FLAVORS



Florasynth being one of the first companies to manufacture powdered flavoring materials, we list below descriptive details of what we feel to be the finest type of New Entrapped Powdered Flavors. Features of these New Entrapped Powders are (1) as high as 50% oil content by weight. (2) Instantly dispersable. (3) Non-hygroscopic. (4) Extremely economical. Shelf life studies have indicated excellent results.

	SUGGESTED USAGE TO 100 LBS.
Apple Imitation	2 to 4 oz.
Banana Imitation	2 to 4 oz.
Cherry Imitation	2 to 4 oz.
Cola Type	2 to 4 oz.
Grape Imitation	2 to 4 oz.
Lemon	2 to 4 oz.
Lemon-Lime	2 to 4 oz.
Lime	2 to 4 oz.
Loganberry Imitation	2 to 4 oz.
Maple Imitation	2 to 4 oz.
Orange	2 to 4 oz.
Pineapple Imitation	2 to 4 oz.
Raspberry Imitation	2 to 4 oz.
Root Beer	2 to 4 oz.
Strawberry Imitation	2 to 4 oz.
Tutti-Frutti Imitation	2 to 4 oz.

Other Entrapped Flavors Developed on Request

Standard Packing: 150 lb. containers

Florasynth **LABORATORIES, INC.**

EXECUTIVE OFFICES: **900 VAN NEST AVE.,** (BOX 12) **NEW YORK 62, N. Y.** • CHICAGO 6 • LOS ANGELES 21

Cincinnati 2 • Detroit • Dallas • Memphis • New Orleans 12 • St. Louis 2 • San Francisco • San Bernardino

Florasynth Labs. (Canada Ltd.) • Montreal, Toronto, Vancouver, Winnipeg • Agts. & Dist. in Mexico—Droguería & Farmacia Mex. S. A., Mexico 1, D. F.

DOW CHEMICALS... some "do nothing" wonderfully well

Many of the chemicals Dow makes go into drugs and cosmetics as *active* ingredients. Also behind the scenes of many popular product successes are chemicals that do nothing more than help other ingredients do a better job. They dissolve, couple, hold together an entire cast of active ingredients. Like the conductor of a great symphony they harmonize, coordinate, get a little bit more than the best out of many brilliant individual performers. And, the happy result in the case of drugs and cosmetics . . . sweet sales music. These notes are about several such chemicals and some of their active brothers.

You may wish to check certain items in this advertisement and forward to those concerned in your company.

Route to:

_____

_____

_____

_____

CLOUDY PRODUCT PROBLEMS CLEARED UP

by low-toxicity Dowanol DPM!

Tomorrow's sales forecast for alert manufacturers of cosmetics and drugs: "Cloudy product condition to clear up soon, impulse appeal, compound stability to reach new highs. Sales outlook sunny!"

The reason: good news out of Midland tells of Dowanol® DPM (dipropylene glycol methyl ether), a new solvent safe to use to roll away the "clouds" of product breakdown. Enthusiastic trade comment says: "Now it is possible for formulators to get all the benefits of this super solvent in concentrations as high as 15%—and with safety from toxic effects!" Here's what it can mean in terms of product improvement . . .

Stormy sales weather threatened the manufacturer of a well-known lotion. Bright as a dollar when it left the laboratory, the hazards of shipping, storage, a cold climate, would cause it to cloud up like a miniature thunderhead. Customers began to pass it by for brands that stayed unclouded and bright. Though the lotion *worked* as well as ever, it had forfeited the powerful psychological advantages of clarity, purity, cleanliness.

Dow chemists were called in. They analyzed the trouble as product separation caused by a solvent that wasn't doing a job. A switch to Dowanol DPM was suggested, promptly tried. What happened made sales history. DPM did a perfect job of coupling troublesome, quarrelling ingredients . . . and resisted low temperatures as effectively as a mink coat. Low temperatures, which are often a shipping condition, no longer present a problem, for Dowanol DPM prevents precipitation of ingredients at low temperatures. Products now arrive in the same high quality as when originally packaged.

Even the most cautious cosmeticians are impressed by the skin-patch tests conducted by Dow using Dowanol DPM. DPM was applied to the skin of 125 men and 125 women. *Not a single one of the 250 subjects showed the slightest evidence of irritation or sensitization!*

More and more applications of Dowanol DPM are awaiting the creative

The "look of it"—in the bottle, on the shelf—is a major factor in the success of today's profitable cosmetic products.

imagination and ingenuity of the cosmetic and drug industry. Uses it is already being put to: perfume fixative, solvent in nail polish lacquers, extraction and crystallization agent in the manufacture of antibiotics. In fact, the warm reception accorded DPM has made it necessary to add to the Midland, Michigan facilities.

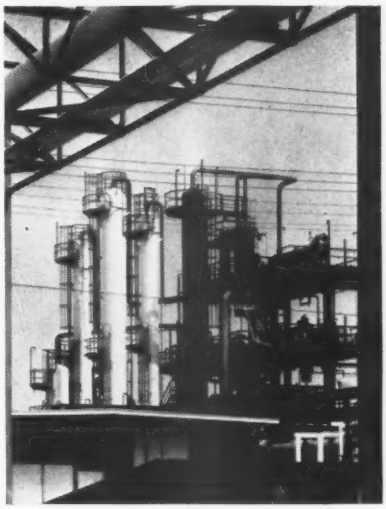
Happy Birthday For Glycerine . . . *and you!*

Storm the Bastille! Ten years ago a revolutionary development – the creation of synthetic glycerine–freed the drug and cosmetics industry from the need to rely on foreign sources or the by-products of soap production for supply. (Too often it was "no soap" when they badly needed this basic chemical.) A few years later Dow made shipments in commercial quantities.

Cosmetic chemists will recall, and celebrate, two important results of this revolution: *First*, price was permanently stabilized. Products employing $C_3H_5(OH)_3$ could now be planned without fear of widely fluctuating price swings. America's supply had become steady and dependable, thanks to Dow and other synthetic supply.

Secondly, man-made glycerine was found to be better, with higher glycerol content, greater purity and clarity. Dow now makes three grades of glycerine . . . synthetic (industrial), USP, and USP 99.5%.

To celebrate glycerine's declaration of independence, Dow suggests you join the party by writing for samples of all three Dow grades. The difference this can make in end-product quality is obvious. And, as one formulator said: "Vive la difference!"



New plant facilities keep pace with increasing demand for glycerine.

DOWICIDE . . . *because product "face" is important*

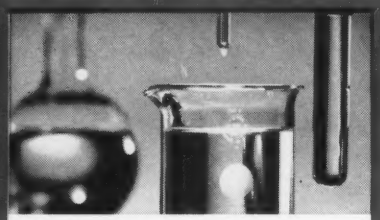
Merchandisers have sometimes seen their brands "lose face" in world markets because of the onslaught of the microscopic world of bacteria and fungi.

Several Dowicide® products were created by Dow chemists a few years ago. These preservative chemicals with low order of toxicity and irritation set up a microbial barrier to organisms. Otherwise these organisms break down cosmetics causing alterations in odor, color, texture, that causes the fastidious user to change her brand.

In the packaging field, too, "face" is protected by Dowicide preservatives. Your package, thus protected, will enjoy a longer and brighter shelf-life, a look that always says to shoppers, "choose me", whenever there's a brand choice to be made.

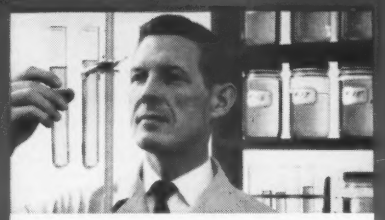
If the crystal ball is cloudy, why not clarify the sales forecast for your brands by consulting with Dow chemists? They can build new sales appeal into products that will give them a distinct edge in today's edgy market. Write: Chemicals Sales Department 782D, THE DOW CHEMICAL COMPANY, Midland, Michigan.

DOW CHEMICALS . . . 4 more of interest



Methylene Chloride . . . *Extractor extraordinary.* Versatile Dow solvent used as an extraction agent for oils, fats, waxes, perfumes, flavors, drugs, antibiotics, vitamins.

Triethanolamine . . . *All in a lather.* This high-quality, low-color product is used as an active foaming and lathering ingredient for shampoos, hand creams, etc.



Polyethylene Glycols . . . *from "the men that make the World's widest line of Polyols".* These Dow chemicals are water-soluble emollient products.

Aromatics . . . *Rose, Muguet* and other stable and efficient, synthetic perfumery raw materials with beautiful names like Coumarin, Dorisyl®, Rosaryl®, Citroviol®.

DOW CHEMICALS *basic to the drug and cosmetic industry*

Aromatics • Emulsifiers • Alkalies • Thickeners • Stabilizers • Glycerine
Solvents • Humectants • Glycol Ethers • Polyols • Preservatives • Ion Exchange Resins • Chelating Agents • Methylcellulose • Amino Acids
Fine Chemicals • Pharmaceutical and Medicinal Intermediates

YOU CAN DEPEND ON DOW

A 72/57

Solves 'skinny' problems

A water-white, liquid saturated fatty alcohol,
Non-irritant, almost odourless,
Easy penetration through the epidermis,
Excellent vehicle for lipoid soluble active ingredients,
Dermatologically approved.
For the preparation of liniments, sun-tan oils,
cosmetic creams, emulsions, lipsticks, hair lotions,
shampoos, toilet soaps, shaving creams, and aftershaves.

EUTANOL G

(Registered Trademark at U. S. Patent Office)

DEHYDAG

DEUTSCHE HYDRIERWERKE GMBH · GERMANY · DÜSSELDORF

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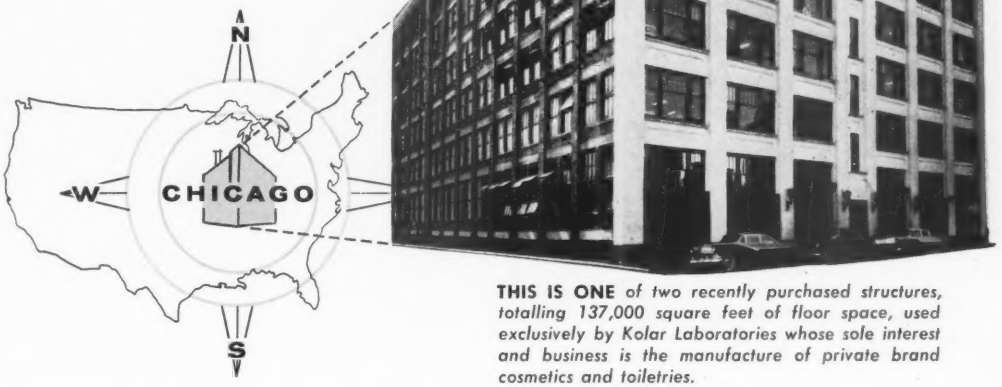
Here's the SOLUTION

Kolar's Low Cost Midwestern Private Brand Cosmetic Manufacturing!



THIS IS ONE *of two recently purchased structures, totalling 137,000 square feet of floor space, used exclusively by Kolar Laboratories whose sole interest and business is the manufacture of private brand cosmetics and toiletries.*

IF YOU DISTRIBUTE COSMETICS OR TOILETRIES...

. . . and are seeking ways to offset rising costs and advancing freight rates, you need not undertake capital financing to build, equip and staff a new plant . . . tie up more money in fixed overhead . . . or assume added production, payroll and personnel problems. All or any part of your manufacturing and packaging (in meeting uncertain or peak load demands) can be handled more cheaply from Kolar's Midwest location.

Kolar is set up to handle a big volume of work. Its personnel know the importance of accurate process control and the need for trimming costs. They are skilled in maintaining quality and expediting production—to meet schedules on time. The whole operation, including Kolar's favorable location, offers benefits that really cannot be matched.

Centrally situated at the nation's hub of transportation, with suppliers of glass and ingredients at its very doorstep, Kolar CAN MANUFACTURE, PACKAGE AND SHIP CHEAPER. If you would like to operate more profitably, ship NORTH, SOUTH, EAST, or WEST at lower cost, and free yourself from production worries—Kolar does have the solution. Phone or write:

KOLAR LABORATORIES, INCORPORATED

1123 WEST JACKSON BLVD., CHICAGO 7, ILLINOIS • Phone: TAylor 9-2060

New England Area: 2 Pine St., Easthampton, Mass., Phone: Easthampton 1250

New York Area: 50-48 St., P. O. Box 807, Weehawken, New Jersey, Phone: Union 6-1277

WITH

DISTINGUISH YOUR PRODUCTS

VAN DYK'S SCENTALLURES

SCENTALLURES:

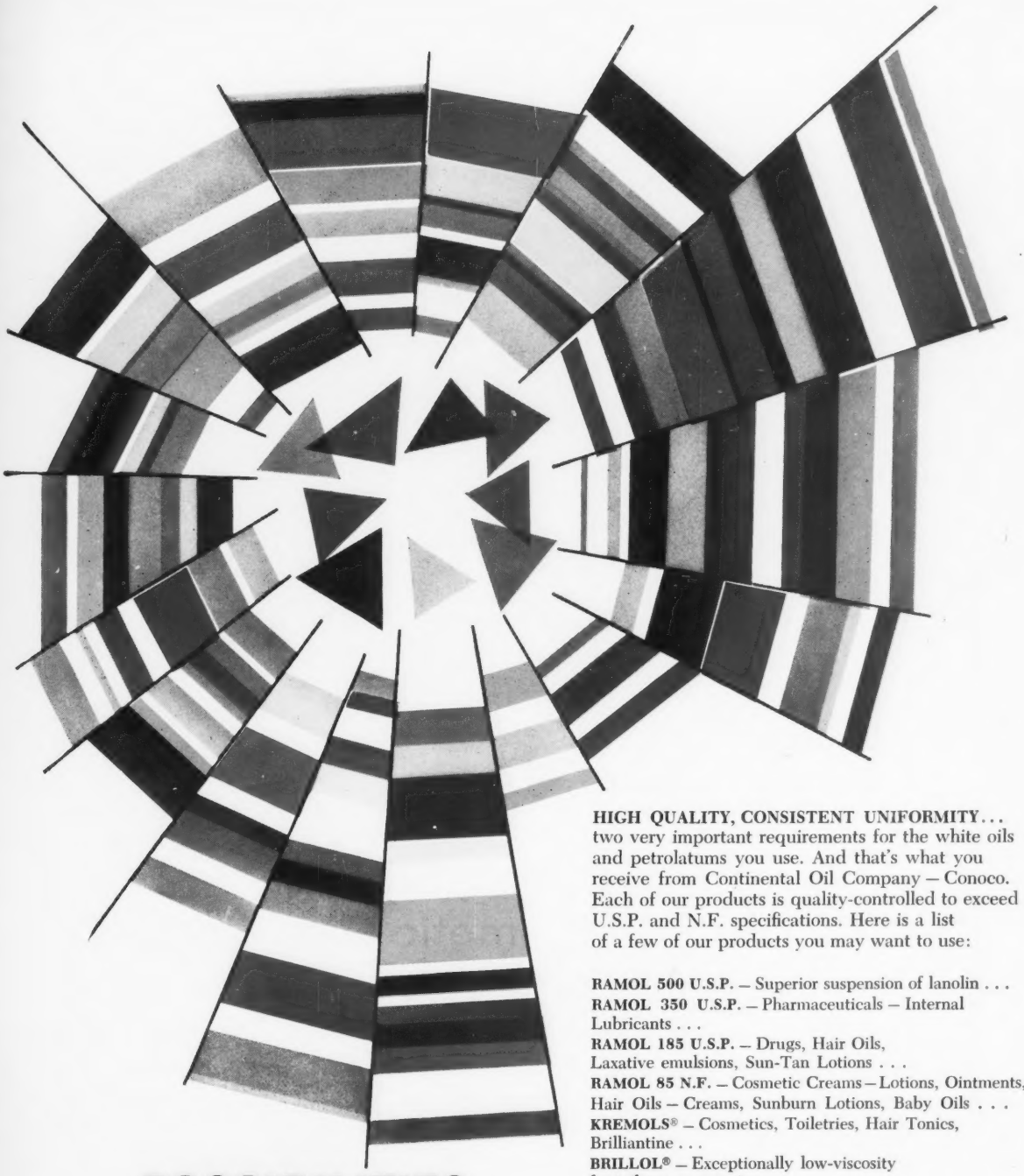
OUR SELECTIVE
PERFUME COMPOUNDS
FOR YOUR
GLASS, AEROSOL
OR POLYETHYLENE
PACKAGED FRAGRANCES
HAIR PREPARATIONS
COSMETICS
MAKEUP
SHAMPOOS
LOTIONS
SUNTAN PREPARATIONS.

SINCE 1904
Van Dyk
BELLEVILLE, N.J.

VAN DYK

AND COMPANY, INC.
BELLEVILLE, NEW JERSEY

NEW YORK • CHICAGO • LOS ANGELES • TORONTO



HIGH QUALITY, CONSISTENT UNIFORMITY... two very important requirements for the white oils and petrolatums you use. And that's what you receive from Continental Oil Company – Conoco. Each of our products is quality-controlled to exceed U.S.P. and N.F. specifications. Here is a list of a few of our products you may want to use:

RAMOL 500 U.S.P. – Superior suspension of lanolin . . .
RAMOL 350 U.S.P. – Pharmaceuticals – Internal Lubricants . . .
RAMOL 185 U.S.P. – Drugs, Hair Oils, Laxative emulsions, Sun-Tan Lotions . . .
RAMOL 85 N.F. – Cosmetic Creams – Lotions, Ointments, Hair Oils – Creams, Sunburn Lotions, Baby Oils . . .
KREMOLS® – Cosmetics, Toiletries, Hair Tonics, Brilliantine . . .
BRILLOL® – Exceptionally low-viscosity for toiletry preparation.
STARLIGHT – Hair Oils and Toiletry Preparations.

Why not investigate the possibilities offered in Conoco's complete line of white oils and petrolatums. We'll be glad to send you samples.

POSSIBILITIES UNLIMITED...

CONOCO WHITE OILS and PETROLATUMS

CONOCO Petrochemicals

CONTINENTAL OIL COMPANY
SHERWOOD REFINING DIVISION
P. O. Box 192, Englewood, New Jersey, U. S. A.
European Sales Office: P. O. Box 1207, Rotterdam, The Netherlands

JUST PUBLISHED
The Drug & Cosmetic Catalog for 1958 - 1959

Greatly enlarged — now contains a directory on AEROSOLS — Contract Fillers, etc.

Complete Reference Book for Drug and Cosmetic Manufacturers

- Complete and only specialized directory of all cosmetic suppliers
- Trade Name Directory of drug and cosmetic suppliers
- Complete condensed catalogs of leading supply companies
- Private Formula and Contract Packagers
- Packages and Packaging Materials
- Machinery and Equipment Manufacturers
- Legal Section
- Aerosols
- Statistics
- Associations of the trade
- Periodicals of the industry

And Special Feature Articles on Cosmetic and Pharmaceutical Formulations.

Buyers, Chemists, Perfumers, Plant Managers, Executives of Drug and Cosmetic Manufacturing Companies will find the information they want in Drug & Cosmetic Catalog.

Beautifully bound — 364 pages $4.00 in U.S.A. Postpaid $5.00 Foreign Postpaid.

Book Department

DRUG & COSMETIC INDUSTRY, **101 West 31st St., New York 1, N. Y.**

INDUSTRY'S STANDARD FOR OVER 100 YEARS...

Atlas

COSMETIC COLORS

Recognized for their superior working qualities, incomparable brilliance and dependable uniformity.

Used in the United States and throughout the world

FIRST PRODUCERS OF CERTIFIED COLORS

H. KOHNSTAMM & COMPANY Inc.

ESTABLISHED 1851

89 PARK PLACE, NEW YORK 7 • 11-13 E. ILLINOIS ST., CHICAGO 11 • 2632 E. 54 ST., HUNTINGTON PK., CALIF.

BRANCHES IN OTHER PRINCIPAL CITIES OF THE U.S.A. AND THROUGHOUT THE WORLD

The Foremost Name in NEW Product Development

DURLIN

for the "ALL NEW" bulk nail polish

First **in Research**
First **in New Improved Clinically Tested Nail Enamels**
First **in Fashion Right Colors**
First **in Technical and Packaging Service**

glamorous hands *around the world . . .*

DURLIN CO.

744 Broad Street, Newark 2, N. J.

Cable Address: Durlin Newark Newjersey

"On the other hand, gentlemen, our position would not be very favorable if it were discovered that we had imported this disease to fit our product."

Keeping Posted

G. D. Searle & Co. Facts

During 1957, approximately one-half of the consolidated net sales of G. D. Searle & Co. were accounted for by the Banthine/Pro-Banthine group and Dramanine, each of which accounted for in excess of 15 per cent of sales. Since 1957 sales totaled $30,597,046, the dollar volume of these items in 1957 was approximately $15,298,000.

The more important products of the company and the year of introduction are: Aminophyllin, 1933 (respiratory and cardiac product); Metamucil, 1934 (bulk laxative); Floraquin, 1936 (for vaginitis); Ketochol, 1937 (gallbladder and biliary tract disorders); Hydryllin, 1947 (antihistaminic); Dramamine, 1949 (motion sickness remedy); Banthine, 1950 (for peptic ulcers, gastritis, etc.); Vallestril, 1952 (synthetic estrogen for suppression of lactation, symptoms of menopause, etc.); Pro-Banthine, 1953 (improved Banthine); Nivelar, 1956 (steroid drug for building body protein); Rolicton, 1956 (non-mercurial oral diuretic); Zanchol, 1957 (gallbladder and biliary tract disorders); Enovid, 1957 (steroid drug for menstrual disorders); Dartal, 1957 (tranquilizer).

Other products, of lesser importance, include Pavatrine for smooth muscle spasm; Diodoquin for amebic dysentery; Alidase to faciliate administration and absorption of fluids injected subcutaneously; Amodrine for bronchial asthma and hay fever; and Kiophyllin and Ruphyllin for certain types of heart disease.

Further information given in the prospectus for the sale of 250,000 shares of Searle common stock, is that the combined sales of Banthine and Pro-Banthine exceed those of any competitive anticholinergic; Dramamine is "a leading product of its class, but is in strong competition with a considerable number of other motion sickness drugs;" Metamucil is the largest selling of the various ethically-promoted products for the "bulk-producing" treatment of constipation.

With reference to Enovid, introduced in August 1957 as a new synthetic steroid "having marked therapeutic value in the treatment of various menstrual disturbances such as functional bleeding, amenorrhea, menometrorrhagia, dysmenorrhea and premenstrual tension," the company says:

"This product has had much publicity concerning its possible use as an oral contraceptive although this publicity presents the product somewhat out of perspective. Many menstrual disturbances are associated with certain types of sterility or with an inability to continue pregnancy to term. To the extent that Enovid is useful in such conditions, it properly may be considered as a 'proceptive' drug. Studies are continuing to determine its value in ovulation control, but have not progressed to the stage where conclusions as to efficacy and safety can be drawn."

Foreign sales are approximately 15 per cent of the total. The company operates in foreign markets through wholly-owned subsidiary companies which market Searle products in substantially all countries of the free world. Company sales staffs are maintained in Canada and England, where sales are almost entirely to wholesalers. In other countries, Searle is represented by non-affiliated exclusive distributors.

At the present time approximately 40 per cent of the main plant area and personnel are devoted to research activities. Since 1947, research personnel has increased two and a half times, as compared with a total personnel increase of about 50 per cent. The importance of research is demonstrated by the fact that about 70 per cent of the sales for 1957 was accounted for by products introduced by Searle in the last ten years. Fundamental and applied research is conducted in the fields organic chemistry, biology, physiology, endocrinology, pharmacology, bacteriology, biochemistry, and related sciences. Searle also contributes substantially to research and clinical activities of a number of outstanding physicians, scientists, hospitals, and medical schools, and contracts for the services of other scientific research organizations and individuals in the United States and abroad.

Searle had approximately 1,000 employees at April 30, 1958, including field sales staff and overseas personnel, of whom a large proportion consists of profes-

Vive la différence

Have your laboratory add
a touch of natural flower oils
to your fragrance composition
and smell the difference.
The added warmth and depth will
always be there—right
down to the end of the container when
Milady is ready to purchase again.

Sole distributors in the U. S. and Canada for CHARABOT & CIE., successors to HUGUES AINÉ, Grasse, France

CHARABOT & CO. INC.

114 East 25th Street, New York 10, N. Y. • ORegon 4-0510

sional and salaried personnel. There have never been any strikes or work stoppages.

The 250,000 shares of common stock offered in the prospectus consisted of 70,000 shares owned by John G. Searle, president, and 180,000 shares owned by Paul E. Tilman and Edward C. Austin, Trustees under the Marion Searle Trust dated December 26, 1935. Mr. Searle stills owns 282,790 shares, and the Trust still owns 384,000 shares. The reason given for the sale was consideration of the impact of prospective federal and state taxation, particularly gift, estate and inheritance taxes, on the Searle family, and the desirability of some diversification of holdings in planning to meet such taxes. After the sale of the shares, the Searle family or trusts for benefits of members of the Searle family, will amount to approximately 50.9 per cent of the outstanding common stock.

Since 1948, sales have tripled from $10,033,434 to $30,597,046, in 1957, and earnings have more than trip led from $1,705,765, to $6,922,787 in 1957. Earnings for 1957 were 22.6 per cent of sales.

T.G.A. and Aerosol Inhalation

The Board of Directors of the Toilet Goods Association has taken the expected progressive point of view and has authorized investigation into methods for determining the safety of, aerosol preparations subject to inhalation. At the last board meeting the matter of inhalation by users of aerosol packaged hair sprays and other toilet goods was discussed with comments by Mr. Goulden, Dr. Hazleton and Mr. Mayham. After a lengthy discussion, the board authorized Mr. Mayham to go ahead with the work necessary to establish a method for testing these preparations.

PMA Ethical Drug Promotion

The Pharmaceutical Manufacturers Association, which is now infull operation as the successor organization to the American Drug Manufacturers Association and the American Manufacturers Association, has adopted the following Statement of Principles of Ethical Drug Promotion:

WE, members of the Pharmaceutical Manufacturers Association, recognizing our responsibilities and obligations to promote the public welfare and to maintain honorable, fair, and friendly relations with the medical profession, with associated sciences, and with the public, do pledge ourselves to the following statement of principles:

1. Prompt, complete, conservative and accurate information concerning therapeutic agents shall be made available to the medical profession.
2. Any statement involved in product promotional communications must be supported by adequate and acceptable scientific evidence. Claims must not be stronger than such evidence warrants. Every effort must be made to avoid ambiguity and implied endorsements. Whenever market, statistical or background information or references to unpublished literature or observations are used in promotional literature, the source must be available to the physician upon request.
3. Quotations from the medical literature or from the personal communications of clinical investigators in promotional communications must not change or distort the true meaning of the author.
4. If it is necessary to include comparisons of drugs in promotional communications, such comparisons must be used only when they are constructive to the physician and made on a sound professional and factual basis. Trademarks are private property that can be used legally only by or with the consent of owners of trademarks.
5. The release to the lay public of information on the clinical use of a new drug or to a new use of an established drug prior to adequate clinical acceptance and presentation to the medical profession is not in the best interests of the medical profession or the layman.
6. All medical claims and assertions contained in promotional communications should have medical review prior to their release.
7. Any violation of these principles brought to the attention of the President of the Pharmaceutical Manufacturers Association shall be referred by him to the Board of Directors.

Bourjois Gains

Bourjois, Inc., showed an eight per cent gain in sales for the fiscal year ended April 30, and profits before income taxes totalled 912,000, a 43 per cent gain over the corresponding figure for the previous year of $644,000. Due to the utilization of the remainder of a federal income tax credit for $465,000, the previous year's taxes totaled only $97,000, while the taxes for the year ended totaled $490,000, an increase in taxes of $393,000, or 405 per cent. Net income for the fiscal year just ended was $422,000, compared with $541,-000 for the previous year.

Carter Products, Inc.

A break-down of the business of Carter Products, Inc. was given to the New Society of Security Analysts last month by H. H. Hoyt, company president. Sales in the fiscal year ended March 31, 1958 were about $42.5 million, compared with $41,836,000 for the previous fiscal year. Net profits reached about $5.6 million, against $4,473,000 for the previous year, an increase of about 25 per cent.

Arrid deodorant, Nair depilatory, and Rise aerosol shave cream all rank number one in their fields in terms of total packages sold. Meprobamate (Miltown) is currently Carter's most important product. Mr. Hoyt expressed the belief that "sales of meprobamate exceeded those of any other tranquilizer last year and accounted for about 30 per cent of tranquilizer sales in retail drug outlets."

Ethical drugs account for 54 per cent of sales; toiletries account for 34 per cent; and Carter's Little Liver Pills and other proprietary drug products account for the remaining 12 per cent.

Carter is expanding its range of products. It now has an antidepressant, Deprol, which contains meprobamate and benactyzine. Arrid Whirl-In, introduced a year ago; Colonaid, a laxative now being marketed nationally; and Snow White, a push-button pressurized tooth paste, are additional products.

While the company takes a cautious attitude toward

"Cotton Mather prescribed for the ailing child: half a pound of live millipedes in a quart or two of wine."

THE CHARMING PHARMACEUTICAL!

In centuries gone by, plagues were countered with lizards' legs, illness with elixirs, or the typical prescription of Cotton Mather's, quoted above. To even conceive the idea of flavoring such witches brews was absurd, and justifiably so. Today, however, together with the development of modern pharmaceuticals, has come the equally acceptable doctrine that illness is not sin—and that the sufferer need not be punished for his transgressions with "vile" medicaments. How satisfying now to be able to be frivolous—pharmaceuticals tinted blue, life saving concoctions tasting of peppermint! And in a sense, the progress of pharmaceuticals can be measured by this very concept of flavoring. We have at last arrived at the time and place for imagination. Here at D&O our flavor chemists combine advanced technical understanding with the flavoring imagination of 20th century wizards to give you "THE CHARMING PHARMACEUTICAL!" Consult D&O.

Essentially for You

D&O ESTABLISHED 1798

OUR 159th Year of Service

DODGE & OLCOTT, INC.

180 VARICK STREET, NEW YORK 14, N. Y.

Sales Offices in Principal Cities

Essential Oils
Aromatic Chemicals
Perfume Bases
Flavor Bases
Dry Soluble Seasonings

acquisitions and mergers, it recently bought Frenchette Company which produces three low-calorie food products: Frenchette, a salad dressing; Mayonette, and Italianette. The latter two are being test marketed.

Further promotion of meprobamate has resulted in Milpath, a combination of meprobamate with an anticholergic for ulcer treatment. Also being marketed is Milprem, a combination of meprobamate with a hormone for menopause. Both of these products are also being sold under cross-licensing by Lederle and Wyeth. Wyeth markets meprobamate under the name of Equanil. Merck is using maprobamate under license in its product Meprolone, which also contains a steroid hormone and is used for arthritis. Last year Meprospan, which is meprobamate in long release form was introduced. Last month the company introduced Miltrate, a combination of meprobamate and pentaerythritol tetranitrate for angina pectoris.

Foreign sales amount to about 8 per cent of total sales. Expenditure for research in the recent fiscal year was $800,000, compared with $750,000 for the previous year.

Carter-Colgate Suit

Carter Products and Colgate-Palmolive Company wound up a lengthy hard-fought battle in the U. S. District Court in Baltimore last month. Carter sought to prove that Colgate's present manufacture of an aerosol shaving cream violates a Carter patent and a 1955 injunction against Colgate-Palmolive under that patent. Carter asked a new injunction extending the 1955 injunction to include detailed prohibitions and an award of double or treble damages.

Most of the controversy revolved around Colgate's claim that its present shaving soap mixture is physically and chemically different from the mixture enjoined by the court. Carter claims that according to the doctrines of equivalance and prior art, Colgate was still violating the original patent.

Opposing Carter's claim for double or treble damages, Colgate pointed out that following the 1955 injunction, when the company had already had manufactured some 4.5 million cans, it removed from the market all but 1.6 million cans which were already sold. Colgate also argued that following the injunction it searched for and found a new product to sell under the company's old Rapid Shave trademark.

P.A.C. Code of Ethics

A Code of Advertising Ethics has been adopted by the Pharmaceutical Advertising Club:

"As an organization devoted to the betterment of pharmaceutical advertising and marketing, we set forth these principles as a guide for ourselves and for those who share our objectives.

"We recognize that ethical business conduct is dependent upon conscience, faith, trust, and integrity, and we believe that pharmaceuticals must be promoted with the highest degree of ethics;

"We believe that accurate and adequate information concerning the use of pharmaceuticals is essential to those who are entrusted with the health and well-being of our people, and that dissemination of factual information is a trust and obligation of the pharmaceutical industry as a whole, and of the indiivdual firms of which it is comprised;

"Further, we believe that pharmaceutical advertising should provide without bias all the information necessary for the proper use of products marketed by the pharmaceutical manufacturer;

"Therefore, it shall be the constant endeavor of the Pharmaceutical Advertising Club to uphold these principles among its membership, and by precept and example to influence and guide toward the same end all those actively engaged in the promotion of pharmaceuticals."

Arthur C. Emelin, PAC president, has announced creation of a Committee on Ethics, headed by Dr. John N. McDonnell of Schering Corporation, and including Ira Contant of Roche Laboratories, and E. A. H. King of Clark-O'Neill.

Nesle-LeMur Buys E. S. Miller

The Nesle-LeMur Company has acquired the entire capital stock of E. S. Miller Laboratories, Los Angeles pharmaceutical manufacturer, by an exchange of stock. Nesle-LeMur says that this purchase is part of a program to increase the company's pharmaceutical operation initiated by the acquisition earlier this year of Carroll Dunham Smith Pharmacal Company. Miller Laboratories produces upwards of eighty pharmaceuticals over a wide range, and this line will be broadened by addition of several Smith prescription specialties.

Joseph S. Lindemann, Nesle-LeMur president, says that not only are additional profits projected from sales expansion, but that operating economies will be effected at the earliest possible date. Consolidation at the Miller plant of three warehousing operations in California now separately maintained for Smith, Nesle, and Harriet Hubbard Ayer, will produce immediate benefits.

Allied Labs.—Campana Deal

Allied Laboratories has filed with the Securities Exchange Commission a registration statement for 65,000 shares of common stock to be exchanged for 9,291 shares outstanding $5 par shares of Campana Sales Company. Allied will be the sole owner of Campana's stock after the exchange, and will be an Allied subsidiary. First National Bank of Chicago, now holding Campana shares in a trust agreement with beneficial owners, would receive 49 per cent of the Allied shares, and the remainder would be distributed to seven owners. The value of the Allied shares being given in the exchange make the purchase price of Campana about $2.5 million.

Schering to Research Antibiotics

Schering Corporation, mainly known for development and research in steroid hormones and antihistaminics, has taken a long stride into the field of antibiotics by breaking ground for a $1.5 million microbiological research and development laboratory at its Union, N. J. location. While present facilities are geared to study new microbiological reactions on a bench or laboratory scale, the new building will provide facilities to

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seek a new broad spectrum antibiotic, and to carry these processes through to the product development stage. While not having produced antibiotic drugs, Schering scientists have used microbiological reactions which can be put to effective use in the development of other biological processes. The new building, to be completed within a year, will be three stories high, 60 feet wide, and 126 feet long, comprising 22,500 square feet.

Polio Control Complicated

The effectiveness of the polio vaccine has been complicated by the fact that two other viruses—ECHO and Coxsackie—have also been found to possess the ability to produce paralytic disease manifestations and the ability to produce similar antibody responses in the body. A group headed by Dr. William McD. Hammon recently explained in the Journal of the American Medical Association that polio, Coxsackie, and ECHO viruses are all enteroviruses, which have many properties in common, including the ability to multiply in the human gastrointestinal tract with or without producing disease. Disease, when it does occur, most frequently involves the central nervous system. Polio viruses have been believed to be the only ones to cause paralysis. ECHO and Coxsackie viruses have been associated with aseptic meningitis. In their study, the researchers found that six cases dismissed as polio were probably caused by Coxsackie and ECHO viruses, since these viruses, but no polio viruses, were isolated from the affected patients. The cases, three of which were considered as gamma globulin failures, occurred during the 1952 field trials of gamma globulin as a polio preventive.

Whether the enteroviruses isolated in the six cases were the respective causative agents is not unequivocably established. Still, they were isolated during the acute phase of illness, and, in the past, the demonstration of a polio virus infection during the acute phase has been accepted as diagnostic. In addition to the six cases of paralytic disease, the researchers studied 10 cases of aseptic meningitis and a group of normal individuals for anti-body response produced by enterviruses. They found that Coxsackie and ECHO viruses have an antigenic constitution similar to that of polio viruses. On the basis of their study, they said that in certain situations, the Coxsackie and ECHO viruses have an antigenic constitution similar to that of polio viruses. Because of the possibility of believing such illness to result from vaccine failure, paralytic or non-paralytic poliomyelitis-like disease must be carefully studied for its cause.

New Abbott Research Building

Abbott Laboratories has broken ground at North Chicago for a major Research Center addition, the largest single construction project in its 70-year history. An eight story structure of glass and steel "curtain-wall" exterior, it will more than double the space available for all phases of pharmaceutical research, development, and control.

A major step in a projected five-year $20 million capital expansion program, the new building will enable Abbott to build the staffs of its scientific divisions from about 600 to more than 1,000 scientists and technicians. Construction is expected to take from 18 to 20 months. The long part of the L-shaped building will have a basement and a penthouse for equipment in addition to eight full stories. The short part of the "L" will be two stories high. The basements of the new and old research buildings will be joined, and there will be passageways connecting the first two floors.

Second Parke, Davis Suit Dismissed

A federal judge in the U. S. District Court in Washington, D. C., dismissed, last month, a civil anti-trust charge against Parke, Davis & Company because the government "failed to prove the existence of a conspiracy." It was the second time in seven months that a federal judge had dismissed, for identical reasons, similar allegations against the company. Last November, a criminal case against the company was tried in the U. S. District Court in Washington, D. C., and the judge dismissed the case after three days. He ruled that the government had failed to produce any evidence of a conspiracy to fix prices. The latest case was dismissed on the third day after it opened. In both cases, the government charged that Parke, Davis had engaged with various co-conspirators (wholesale and retail outlets in the District of Columbia and Virginia) in an unlawful conspiracy to establish, maintain and enhance wholesale and retail prices of its products. P.D. President Harry J. Loynd commented: "A decision which emphatically confirms the inherentt right of a manufacturer to choose his customers. It reaffirms the right of pharmaceutical firms to limit sale of their products to the channels of trade they consider appropriate and suitable to their particular needs—as, in this case, those who have a legal right to handle prescription drugs."

Two New Upjohn French Companies

Upjohn International Operations, Inc., has established two French companies to develop the marketing of Upjohn pharmaceutical products in the French Union. One company, Union Chimique Atlantique, S.A., will manufacture pharmaceuticals and pharmaceutical chemicals. These will be distributed by a second firm, Laboratoires Upjohn S.A.R.L., soon to be organized. Robert S. Jordan, president of Upjohn International Operations, said Upjohn is cooperating in these projects with the Societe Industrielle Pour La Fabrication des Antibiotiques (commonly known as S.I.F.A.). President and general manager of the new companies will be Monsieur Jean Bengue, an experienced pharamecutical executive. Temporary offices are at 63 Boulevard Haussman, Paris. Exchanges of technical information and scientific personnel are already under way, and it is anticipated that Laboratoires Upjohn will market its first products late this year.

Vick Buys Walker Laboratories

Vick Chemical Company has acquired Walker Laboratories through an exchange of stock. Walker, formed eighteen years ago, produces about 85 ethical vitamin and nutritional supplements. The company has a very strong acceptance for its products by pedi-

atrists and obstetricians. This business will give Vick a more important position in the vitamin and nutrition field, according to H. S. Richardson Jr., Vick president. Walker had net earnings of $123,234 on sales of $2,241,731 in 1957. Vick's other ethical divisions are The Wm. S. Merrell Company, which concentrates on organic chemistry and chemo-therapeutics, and the National Drug Company, which specializes in biochemistry, virology, and human biologicals.

Vick earned $9,521,680 on sales of $86,121,689 in the nine months ended March 31 and expects to pass the $100 million mark for its fiscal year which ended June 30. Under the terms of the purchase, nine shares of Vick are being exchanged for 100 shares of Walker.

Markets Non-profit Item

Mead Johnson & Company has marketed a product for which there are only 420 new customers a year. Feeling that the need was great, and that there was a moral obligation to develop and market the product, the company expanded two years of research and $85,000 to develop the product and bring it to market. Because of high costs resulting from the low production, any profit on the product would have meant that the product would be financially out of reach of most persons who needed it. Therefore, the company decided to sell the product at cost of manufacturing plus overhead.

The product, Lofenalac, is a specialized nutritional preparation which prevents the development of mental retardation in infants born with a certain type of metabolic deficiency called phenylketonuria which prevents the proper metabolization of phenylalanine, an essential amino acid found in all natural protein foods. This causes accumulation of abnormally high levels of phenylalanine in the blood. If allowed to progress beyond the fourth month of life, the brain's development will be arrested, and severe mental deficiency result.

Bayer-Sterling Case to Court

The U. S. Supreme Court has denied an appeal by Sterling Drug to review a lower court decision in the suit brought by Farbenfabriken Bayer, A.G., of Leverkusen, West Germany for an accounting of a former partnership between the two firms. This decision clears the way for the case to be tried in the New Jersey Federal District Court. Sterling petitioned the U. S. Supreme Court for a writ of certiorari after the U. S. Court of Appeals in Philadelphia had ruled that Bayer was entitled to proceed with its action in U. S. courts. The appellate court reversed a previous decision by the Federal District Court in Newark, N. J., which had held that the German firm was barred from suing under provisions of the Trading With the Enemy Act.

Union Carbide Resumes Building

Union Carbide Corporation is proceeding with construction ofthe Technical Service Laboratory originally planned at its Westchester County property at Eastview, near Tarrytown, N. Y., on which plans were deferred in February last pending further study.

The laboratory will be a three-story building located on the 280-acre tract. The main building, with a total floor area of 85,000 square feet, will house 53 individual laboratory units. These facilities will be complemented by a mechanical testing building in which pilot plant operations will be conducted and special materials testing studies will be made. Glass will be used extensively on exterior walls to provide a maximum of natural light. The laboratory will include a 200-seat auditorium which will be used to hold seminars and other technical meetings.

The laboratory will both expand and centralize the facilities of Union Carbide Chemicals Company for the development of technical information to solve customers' problems and to conduct application research on new products. At present, much of this research is carried on by Union Carbide Chemicals at South Charleston, W. Va., and at other chemicals plant locations.

Dr. Apple to Succeed Dr. Fischelis

Dr. William S. Apple, head of the postgraduate department of pharmacy administration at the University of Wisconsin, is the selection of the A.Ph.A. committee to succeed Dr. Robert P. Fischelis as secretary of the A.Ph.A. when Dr. Fischelis retires following the 1959 A.Ph.A. meeting in Cincinnati. Dr. Apple has joined the association as assistant secretary.

Lilly Chemical Expansion

A new $4.6 million chemical plant recently put into operation at Eli Lilly and Company's Tippecanoe Laboratories, Lafayette, Indiana, increases by 50 per cent the firm's capacity for manufacturing fine organic chemicals. The new 20-acre chemical units consists of a processing building, service building, warehouse, solvent recovery and storage facilities, solvent incinerator, and waste treatment and disposal facilities. Among the processes Lilly is now equipped for are catalytic hydrogenations, chemical hydrogenations, reductive amination, halogenations, esterifications, condensations alkylations, Friedel-Crafts reaction, Grignard reactions, Mannich reactions, sulfonations, dehydrogenations, hydrolysis reactions, sodium amide reactions, hydrogenalysis, hydration, dehydration, and isomerization.

Pfizer Biological Research

A biologicals research program has been launched by Chas. Pfizer & Co. under the direction of Dr. Joel Warren, formerly a member of the Division of Biologic Standards, National Institutes of Health. Dr. Warren will supervise a program of basic and applied studies at Pfizer's recently established biologics center near Terre Haute, Indiana. Working with him as head of Pfizer's respiratory virus research section is Dr. Keith E. Jensen, who served previously with the U. S. Public Health Service's Communicable Disease Center at Montgomery, Alabama, as chief of the respiratory disease unit. The move is a major step in Pfizer's expanding research program and is designed to speed development and production in the important field of biologicals, according to Dr. Jasper H. Kane, vice-president and director of research.

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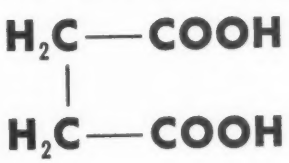

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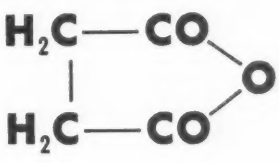

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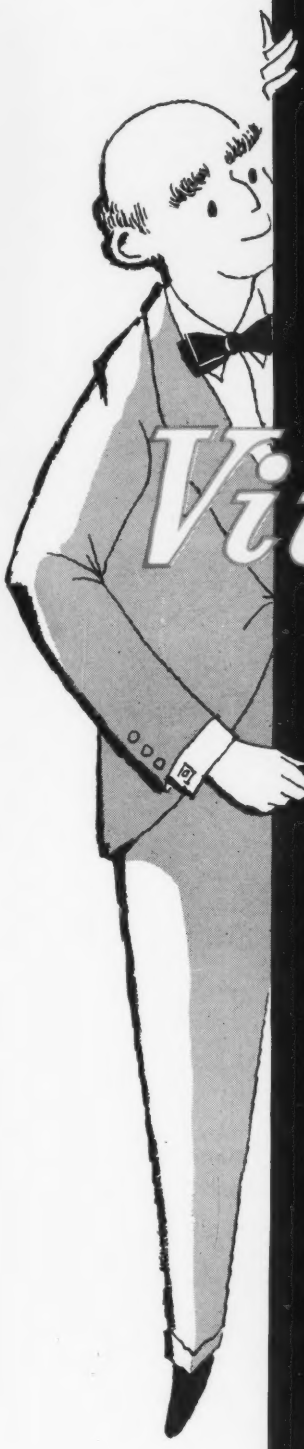

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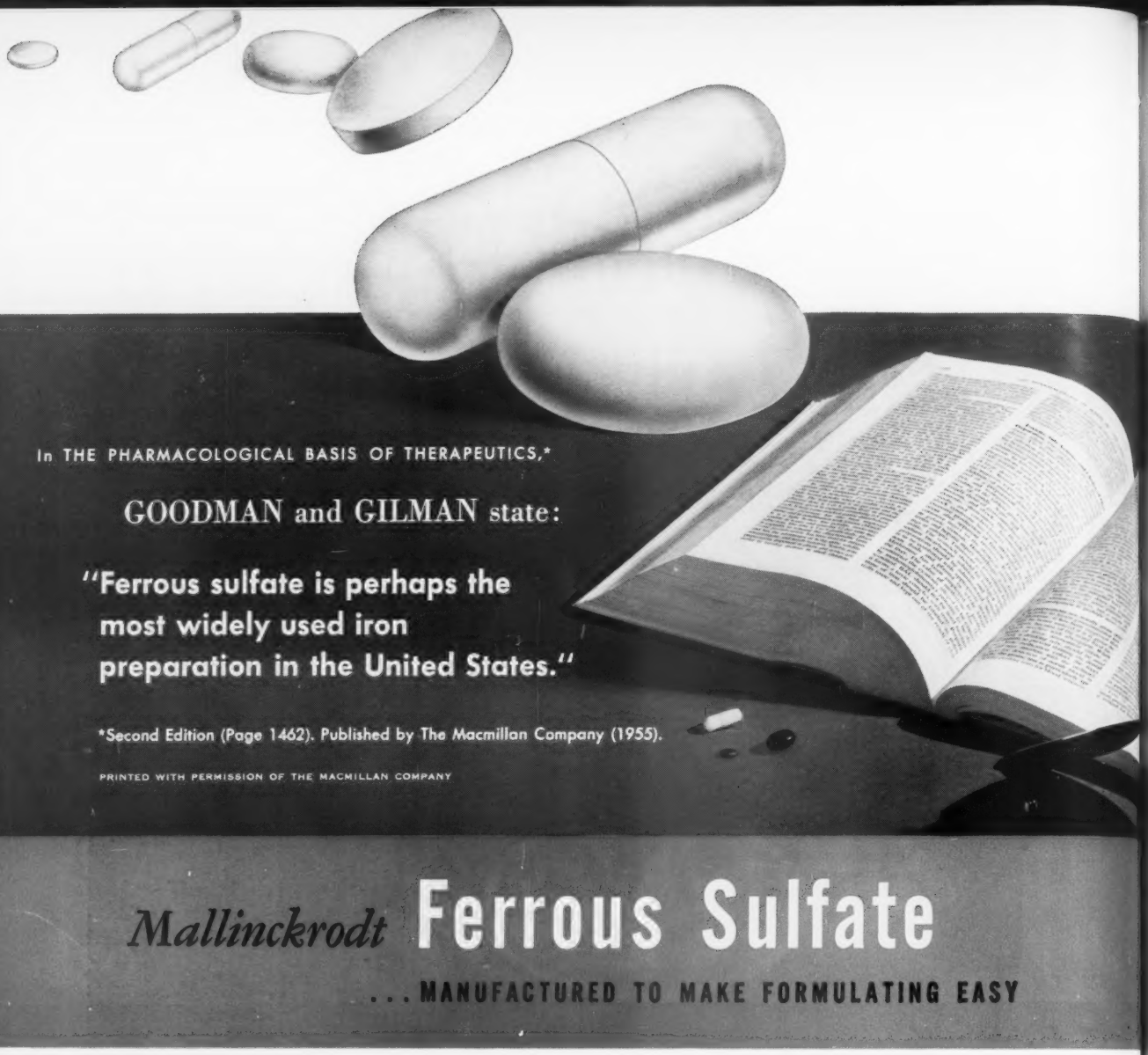

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COSMETICS, CHEMICALS and CLAIMS*

BY GEORGE P. LARRICK, COMMISSIONER OF FOOD AND DRUGS

A few years ago a dealer in essential oils worried by recurring complaints of reactions from his perfumes and scents, decided to test the oils being used in his factory to be sure his products would cause no adverse effects. By animal experimentation, he found about a score of ingredients that he considered safe for incorporation in any formula, and then with great confidence he started marketing compounds that contained only these ingredients. The results were disappointing. As the new formulas began to cause reactions, he remembered that when two reactive chemicals are mixed together, you are apt to get a new compound differing significantly from either of the starting materials.

The tendency of separate ingredients to undergo chemical change in a final formulation is characteristic not only of essential oils but also of many other ingredients used in cosmetics. Some of the changes are desirable and without harm. For example, we want the change that takes place when beeswax and borax combine to form an emulsifying agent for creams. But some of the changes are harmful.

Even though the perfume manufacturer forgot some of his chemistry, his motives were good. He recognized the principle that substances to be applied to the human body should be tested for safety before they are marketed. He was going in the right direction. And we all recognize that your industry under the able leadership of Steve Mayham, Harold Goulden, and Fuller Holloway has made tremendous advances in the use of modern scientific techniques.

Over the years, some cosmetic manufacturers have failed to test their products carefully and the results have been distressing and sometimes disastrous. You know of the incidents, but just to refresh our memories, let's list some classic examples of the past few years. There was the solution for giving permanent waves without heat that killed a user because of the presence of ammonium hydrogen sulfide; several

Commissioner George P. Larrick

hair straighteners and shampoos caused injuries because of excess alkali; a modified resin in hair lacquer burned users; a new nail base coat caused severe injuries in 1949, and again in 1957 a plastic press-on fingernail coating had to be recalled because of extensive injuries; a liquid cream irritated the eye of users and had to be recalled; rapid driers for nail polish and hair contained enough carbon tetrachloride to cause harm through inhalation or skin contact; a number of shampoos damaged eyes when the shampoos dripped into them.

Each of these incidents has one thing in common. The cosmetic was not tested adequately before marketing to determine that it could be used safely. Had adequate tests been performed, and in some cases had

*Before the Toilet Goods Association, Inc., Poland Springs, Maine, June 26, 1958.

an adequate review of the literature been made, the firms could readily have determined that the preparations were not safe. In fact, some manufacturers investigated the new detergent ingredients that were responsible for eye injuries and widespread recalls in 1952, and decided not to put the detergents in their shampoos.

The American woman today wants a greater assurance of safety in her cosmetics. There are increasing demands for a change in the Federal law which would require adequate testing of cosmetics before they are placed on the market. Bills were introduced before the 85th Congress to require such testing.

Our Department is studying these bills, but has not yet taken a position with respect to them, so we are not in a position to comment on the specific bills. However, it seems reasonable to conclude that eventually there will be legislation requiring cosmetics to be tested for safety before they are marketed.

The situation with respect to cosmetics is quite comparable with the situation that prevails in the food field. As you know, there is a growing desire for adequate testing of chemical food additives before they are marketed and our Department has drafted proposed legislation to strengthen the Federal law with respect to them. The basic principles that the Department followed in drafting chemical food additives legislation are:

1. The intended use of an additive in a food should be shown to be safe from the standpoint of long-term as well as short-term consumption before it is tolerated.

2. The use of a poisonous or deleterious additive should serve a purpose beneficial to the consumer. The purposeless addition of poisons to food should not be permitted.

3. Evidence to establish the above points should be secured by the person who wishes to promote uses of the additive and should be submitted to the Government for evaluation. The proposed use should be permitted by the Government only after a favorable decision by competent scientists.

4. There should be adequate provision for appeal of an adverse Government decision to the courts according to procedures that permit full consideration of complex scientific questions by scientists. New, untried appeal procedures should not be experimented with in this field of public health protection.

5. Any additive already in use whose safety is not generally recognized should be tested to establish its safety. There should be a reasonable period of time after the new law goes into effect to permit such testing.

We do not know whether a food-additives amendment will be passed this year, but there is such general recognition of the need for corrective legislation that we can anticipate such an amendment sooner or later.

There is one respect in which the control of new cosmetics and the control of new food additives may have to differ materially. The Department has proposed in its food additives bill that each new additive be tested before marketing and, on the basis of the test results, that the Government determine and publish by regulation the conditions under which it may safely be employed in food. Thus, a regulation might provide that a certain additive could be used in bakery products in a concentration not to exceed 0.1 per cent. Scientists tell us that this is a proper method of controlling most of the chemical food additives. But this procedure would not necessarily afford acceptable safeguards with respect to new cosmetic ingredients. Remember the perfume manufacturer and his attempt to solve the toxicity problem. Adequate control of cosmetic toxicity may require an evaluation of each separate formula before a valid safety decision an evaluation of each separate formula before a valid safety decision can be reached. The procedure for doing this is already established in the present law. For 20 years we have been handling new drugs on that basis. A new drug application refers to a given formulation intended for marketing and not to a single ingredient intended to be used in many different formulations.

This question deserves thorough study both by the Government and by the industry.

Another subject of considerable interest these days is the status of the coal-tar colors. The law provides for the listing of coal-tar colors which are harmless and suitable for use in cosmetics and for certification of batches of these listed colors. In similar manner it provides for the listing of colors that are harmless and suitable for use in foods and in drugs.

As you know, we believe that the term "harmless" must be interpreted literally. Thus for a color to be eligible for listing or to remain on the list it must be harmless under all possible methods of use. We found

a few years ago that some of the listed food colors were not harmless. Two of them caused sickness in children when they were used in relatively high amounts in candy and popcorn for sale during the Halloween season. The laboratory studies that followed showed the two of the red colors, one orange, and four yellows that had been listed for use in foods, drugs, and cosmetics are not literally "harmless." We have already delisted the reds and the orange and are in process of delisting the four yellow colors. Additional long-term studies are under way on other Food, Drug, & Cosmetic colors, and we recently started preliminary studies on some of the drug and cosmetic colors. Subacute toxicity studies on D&C Red Nos. 7, 9, 10, 19, 21, 27 and 36 and on Orange Nos. 5 and 17 have cast some doubt upon the ability of these colors to meet the criterion of "harmlessness" set forth in the law. Further investigation is required before we can determine the future status of some of them.

We all recognize that some of the food colors that have been delisted and are in process of being delisted might be safe for use in food under a tolerance restriction. However, we believe the law does not give us the right to establish tolerances for the colors.

To meet this situation the coal-tar color industry has suggested an amendment that would permit us to establish safe tolerances and safe conditions for use for colors that do not meet a strict requirement of harmlessness. Our Department has not completed its study of these bills so again I am not in a position to bring you a detailed report of our views on them. However, the Department has agreed with us that a tolerance-setting procedure would be a more rational approach to the problem.

I would like to recognize and applaud the efforts the Toilet Good Association and Steve Mayham and Fuller Holloway have made to get industry support of and compliance with present law. They have worked hard to get safe cosmetics and truthful labeling. Despite their efforts we have concluded reluctantly that the cosmetic industry has not shown that it is able to protect the public adequately from extravagent claims by self-policing. There are some opportunists in your industry who cannot resist the urge to capitalize improperly on new fanciful ingredients and developments.

The opportunist makes extravagent claims about some new ingredient, even though it may not accomplish the benefits attributed to it. Then, while the Government develops the evidence necessary to reach a sound decision, he rakes in the profits from his scheme. He stops either when we prove that the claims are false or when the public becomes disillusioned and turns to some other product.

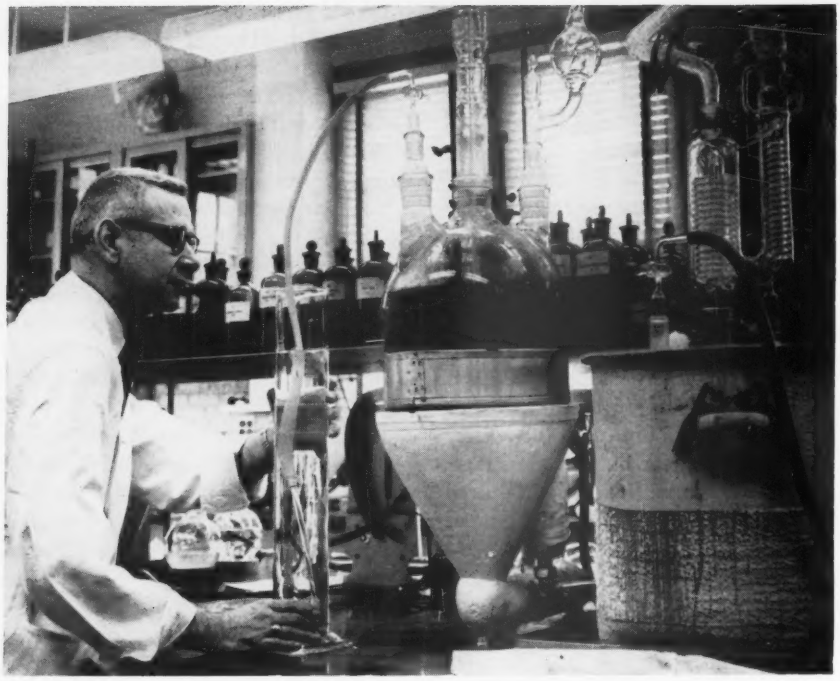
We still encounter occasional cosmetics that are supposed to have miraculous properties because a little turtle oil is present. If your experience with turtles has been the same as mine—the necessity of taking them off your fish hook once in a while and chasing them out of your tomato patch—I expect you share my amazement that any woman would rely upon the oil of the turtle for cosmetic benefits. But we understand that the turtle lives to a ripe old age and this must be due to the oil in his body and so if you just smear a cream containing the oil on your face you will get miraculous skin rejuvenation, sagging muscles will be firmed up, and the oil will bring back a fresh, youthful glow to the aging face and throat skin. I don't believe it, but that is the approach of some of the people on Madison Avenue. I have never been able to figure out what will keep the turtle oil user from getting skin as wrinkled and ugly as the turtle's.

You don't have to go back to turtle oil to find examples of wild cosmetic promotion. Within the recent past, we have encountered the use in cosmetics of chick embryo extract or so-called biostimulines, which are supposed to regenerate new cells and prevent wrinkles and sagging skin; plankton, the minute organisms of the sea, for use as a skin food, nutritive and decongestive; the use of pig-skin extract as a skin rejuvenator; and roasted and powdered hair as a hair grower; horse blood serum as a skin rejuvenator; amniotic fluid to accomplish the same benefit, shark oil to bring vitality and usefulness to dry, aging skin; and orchid pollen which was heralded as an ingredient with no special claims. Apparently it's so good they can't tell you what it's for.

We have encountered a lotion containing a placenta residue that is supposed to be good for aging skin, wrinkles, and skin rejuvenation, a truly amazing claim when you consider that the placenta ingredient is the residue left after the pharmaceutical manufacturer has extracted the valuable constituents from the placenta.

A few days ago we encountered a tranquilizer for the skin which is supposed to relieve the appearance of stress and strain due to the pace of modern living. And we just recently have seen a great surge of promotion for that inestimable, priceless gift of the beehive—royal jelly. If you believe the advertising, royal jelly is good for anything that ails you. And if you look at the prices being charged for it, it ought to be.

Unfortunately the originator is not the only one that gets mixed up in these wild promotional schemes. Perhaps he starts the parade, but once he begins to make headway other firms find themselves caught in a competitive situation which they evidently believe requires that they adopt the new ingredient and the wild claims being made for it. Continued reliance on unsupportable wild claims cannot help but work to the ultimate harm of your entire industry. We urge you to find a solution to this problem. Perhaps your Association will wish to develop a statement of fundamental principles for the guidance of its members.



COURTESY MERCK & CO.

Steroid Research II

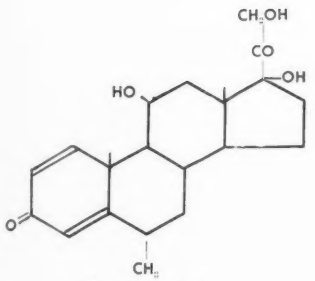
HOW TO WIN AT STRUCTURAL ROULETTE

BY NORMAN APPLEZWEIG
NORMAN APPLEZWEIG ASSOCIATES

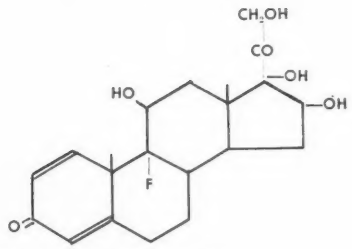
How to get into steroid research and what to look for has as many answers as there are investigative groups in this field. In each case, the resulting approach is a function of the history, capability and philosophy of the particular group. The widely varying approaches can best be understood by examining briefly the diverse activities of each of the leading research organizations.

Merck—Merck & Co. is acknowledged to be the pioneering group in the commercial development of cortical hormones. Before the era of cortisone, the Merck research organization was already one of the finest of its type in the world, having successfully pioneered in the vitamin, antibiotic and chemotherapy fields. Although cortisone had been isolated and identified some 12 or 13 years earlier independently by Kendall, Wintersteiner and Richstein, it was only through the determined effort of Merck research that their brilliant young Lewis Sarett was able to synthesize the hormone in 1946. By 1948, the relatively huge amount of 10 grams was made available for testing at the Mayo Clinic, which produced the stunning results that are now so well known. Starting in the way it did, the major emphasis of Merck research seems to have been on process improvement and in this they did a superb job. With unrelenting effort, Merck's steroid researchers, under the direction of Max Tishler, developed technics for mass production of corticoids from the bile acids with increasing proficiency and lower cost. While at the same time concerning themselves with syntheses from alternative

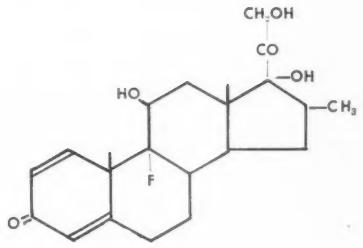
ANTI-INFLAMMATORY



Medrol (Upjohn)

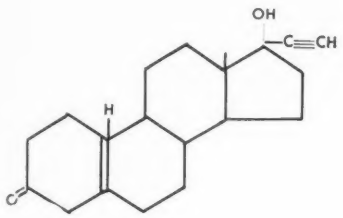


Triamcinolone
Aristocort (Lederle)
Kenacort (Squibb)

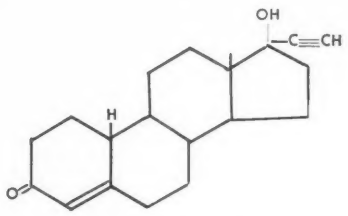


Decadron (Merck)

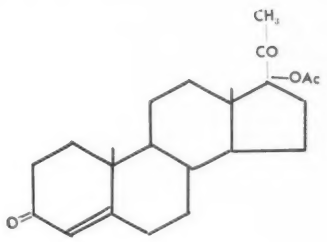
PROGESTINS



Enovid (Searle)

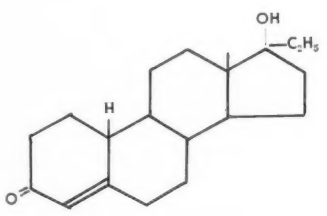


Norlutin (Parke Davis)

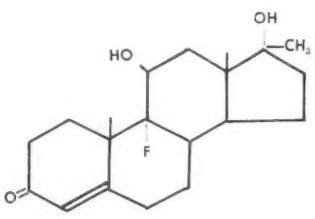


(Upjohn)

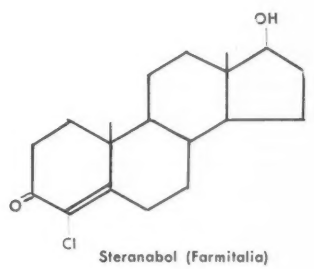
ANABOLIC



Nilevar (Searle)

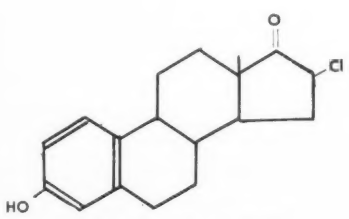


Halotestin (Upjohn)

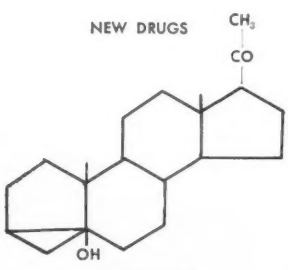


Steranabol (Farmitalia)

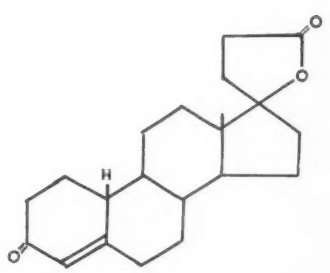
NEW DRUGS



Anti-Atherosclerotic (Searle)



Tranquilizer
Neurosterone
(British Drug Houses)



Diuretic
(Searle)

raw material as well as total synthesis, the Merck workers succeeded in improving their bile acid processes to the point where they are still untouchable with regard to competitive technics. When it became apparent that hydrocortisone was the natural hormone to which cortisone was converted in the body, a Merck team of Wendler, Graber, Jones and Tishler, was the first to synthesize and devise methods for the economic production of this compound. When prednisone and prednisolone came along, Merck's superior production technics enabled them to mass produce these compounds with relative ease. The bulk of Merck research, however, seems to have been concen-

(Continued on page 94)

TGA MEETING

Meeting for the first time since the organization was organized in 1935, the Toilet Goods Association held its annual convention in Poland Springs, Maine, June 25-28. The Association elected Arthur Johnson, assistant secretary of Colgate-Palmolive Company as president to succeed Pierre Harang. Oscar Kolin, of Helena Rubinstein, was elected a vice-president. Re-elected as vice-presidents were Jean Depres, of Coty; J. I. Poses, of D'Orsay Sales, and Robert E. Schwartz, of Wildroot Company. Philip C. Smith, of Yardley of London, was reelected treasurer, and William F. Denney Jr., of Frances Denney, was reelected secretary.

To fill the two-year terms caused by Mr. Kolin's election as vice-president and by the resignation of Lewis F. Bonham formerly of Bourjois and now of Miles Laboratories, as directors, Henri Costerg, of Dana Perfumes Corporation, and Lessing L. Kole, Kolmar Laboratories, were elected. Reelected as directors for a three year term were Robert B. Brown, of Bristol-Myers Company; C. W. Godefroy Mfg. Company; John E. Hardy, of Daggett & Ramsdell; William Mennen Jr., of The Mennen Company; and Richard Solomon, of Charles of the Ritz. New directors elected for a three term are Stuart K. Hensley, president of Toni Company; and George Kremer Jr., president of Roux Laboratories.

For directors representing associate members, a two-year term, Dr. Lloyd Hazelton, of Hazelton Laboratories was reelected, and Edward P. Morrish, vice-president of Firmenich, was reelected.

In his presidential address, retiring president Pierre Harang reviewed the activities of the association and the important services which it renders to the industry, not the least of which is effective public relations activities. To illustrate the work of the members of the staff of the association, Mr. Harang cited a long list of questions they are called on to answer in the course of queries which come to them from all over.

U. S. Food and Drug Commissioner George P. Larrick delivered an excellent analysis of the problems which the industry should take action on to bring themselves into a position that would make them fully in compliance with the laws governing the industry. The full text of Mr. Larrick's talk begins on page 33.

Earl W. Kintner, general counsel, the Federal Trade Commission, had the following to say regarding cosmetics:

Ersatz allure comes in many forms and often in containers and packages of unsurpassed elegance. Here only do we find products marketed under such

TGA President Arthur E. Johnson

intriguing designations as "Passion," "Last Fling," "My Sin," and "Perhaps," or described as "Adventure—after dark," or as "Snow Peach—a peach with a pink complexion cooling its blushes in the snow—a heavenly hybrid, like nothing ever grown, like nothing ever known, till now."

Since the turn of the century we have seen a marked change in the attitude of the public respecting the use of cosmetics. Most of us now accept as proper, even desirable, the use of many products designed to enhance personal appearance and attractiveness which not so many years ago was under general condemnation. If we go back to the eighteenth century the change of Parliament enacted a law which provided "that all women, of whatever rank, age, profession, or degree, whether virgins, maids, or widows, who shall after this act impose upon or betray into matrimony any of His Majesty's male subjects by virtue of scents, paints, cosmetic washes, artificial teeth, false hair, Spanish wool, iron stays, bolstered hips, or high-heeled shoes, shall incur the penalty of the law now in force against witchcraft . . . and the marriage shall be null and void." Today it is estimated that lipstick may be found in the purses of more than two-thirds of the feminine sex in England, as well as in our own country.

So in the last three decades the Federal Trade Commission has found it necessary to give considerable attention to cosmetics and related products of

your industry. Since promotion is so essential and so substantial a factor in your industry, it is understandable why false and misleading claims in the marketing of such products have been so persistently the subject of corrective action at the Federal Trade Commission.

For example, the Commission has been active in effecting correction in a widely prevalent situation which existed in the perfume market. The challenged practice involved misrepresentation as to price and origin. Also involved was the practice of simulating well-known and established brand names.

Claims for anti-perspirants have been challenged, such as stops underarm odors, stops perspiration. Some such claims have been allowed, provided disclosure is made in conjunction therewith that the products do not have a permanent effect on underarm odor or underarm moisture.

Claims for various cosmetic hair preparations have been challenged such as—makes hair straight, makes hair long, promotes the growth of hair, stops dandruff, stops falling hair, prevents loss of hair, will give the user healthy hair, restores natural oils to the hair, restores natural color to the hair, banishes grey hair or imports or restores original or youthful color to the hair, corrects damage to the hair structure caused by improper dyeing, permanents or bleaches; prevents baldness, cures or prevents dandruff, scaliness of the scalp or the cause of scalp itch, corrects or prevents split hair or hair breakage, keeps the scalp healthy and many other such claims.

Advertising respecting bleach creams have been attacked. Questionable claims include representations that such products will lighten dark skin to almost unbelievable fairness, will enable one's skin to hold any desired shade, will cause dark skin to flake off, accomplishes deeper pore cleansing than any other cream, will give one's skin a new clearness, or a clear vivid and healthy skin, or a freshness and fine texture with every particle of dust, dirt, and make-up removed from the pores, erase wrinkles and lines from the face, strengthen sagging muscles, correct dropping chin lines, plump out hollows in the neck and cheeks, keep one's skin firm or youthful, and will give one clear, radiant, flawless skin.

Such claims as "will cause eyelashes to grow longer and thicker" have been inhibited, as have claims that certain soap products will lighten or bleach the skin and bring out hidden, lovely or natural complexion.

Why do I mention these unpleasant subjects on this most pleasant occasion, recalling memories that perhaps you all would like to forget? I do so simply because I am advised that in certain quarters in this industry the reckless advertising writers may be getting out of hand and perhaps yearning nostalgically for the days of old. Those days are gone forever, a fact which I am sure the wise leaders of this industry recognize full well.

Consider that during one 28-day period recently the relatively small advertising unit of the Federal Trade Commission surveyed the advertising in 42 magazines, 281 newspapers, and 728 radio and television continuities. Over seven hundred questionable advertisements were referred to the Commission's Bureau of Investigation. One hundred and forty-one matters were referred to the Bureau of Consultation as possible violations of Trade Practice Rules or stipulations. This questionable material was selected from 200 newspapers each week, 50 national magazines each month, and the commercial continuities of approximately 200 radio and television stations each week.

In addition there were scores of complaints from the public and from competitors, not to mention the results from many hours of monitoring and recording TV commercials by qualified attorneys in the Commission's nine field offices.

Consider too the fact that in 1957 the Commission issued 324 complaints, an increase of 103 over the total for 1956. There were 213 cease and desist orders issued in 1957, an increase of 25 over the 1956 figure. Finally, of significance are the facts that 140 other

(Continued on page 109)

Seated on dais at the TGA Scientific Section meeting are, left to right: Walter W. Edman of Evans Chemetics, newly elected vice-chairman of the section; Charles Fox and Dr. Donald H. Powers, both of Warner-Lambert Pharmaceutical, winners of the 1958 CIBS award; Dr. Emil Klarmann, chairman of the section; William L. Jaeger of Park & Tilford, president of CIBS; and Dr. F. J. Austin, honorary chairman of the section.

SCC MID-YEAR 1958 MEETING

At the mid-year meeting of the Society of Cosmetic Chemists on June 4, the Society's 1958 special award of a scroll and $1,000 was made to Professor William Montagna of Brown University. The award was based upon Dr. Montagna's book "The Structure and Function of the Skin" and his research and publications in the field. The presentation was made at luncheon by James H. Baker, President of the Society of Cosmetic Chemists. Dr. Albert M. Kligman, professor of dermatology at the University of Pennsylvania, eulogized the award winner and described his accomplishments. The award was made by the Special Award Committee, H. J. Amsterdam, the chairman, for material submitted by the Literature Review Committee, Dr. L. D. Apperson, chairman.

Dr. Montagna, responding to the award, delivered his paper on "The Particularity of the Human Skin". According to the speaker, "The early pattern of differentiation of cutaneous appendages is orderly and precise. The hair follicles grow first, and from them grow their secondary appendages, the sebaceous glands and apocrine sweat glands. The eccrine sweat glands develop last . . . Each of these appendages differentiates into an organ that produces a different endproduct. The surface epidermis is concerned with manufacturing keratin, the hair follicles produce cylinders of keratin . . . sebaceous glands secrete on the surface of the skin oily, waxy substances that keep the corneal mantle supple . . . eccrine sweat glands, the thermoregulatory organs of the body are indefatigable in eliminating sweat . . . apocrine sweat glands should not be considered to be vestigial organs . . .

"Skin shows striking topographic differences over the body. It is rough in some places, smooth in others; it is taut or lax, colored or pale, naked or hairy, thick or thin . . . The scalp has many features that set it apart from the rest of the skin . . . Skin is a kaleidoscopic organ with a turbulent rate of turnover. It is sensitive to changes, internal or external and makes constant adjustments to these changes . . . The academic investigator can afford to study skin with leisure, as he would any other organ of the body. The physician, however, gives direction and urgency to these studies. Let the cosmetic chemist capitalize on these findings by compounding substances that make us more attractive, and which are harmless. Armed with fundamental knowledge, he may actually produce cosmetics that may be beneficial to the skin."

Papers given at the technical sessions, organized by the Program committee chairman, Dr. R. K. Lehne, included "Percutaneous Absorption of Vitamin A" by Dr. Albert E. Sobel; "Effect of Metabolite Analogs on the Formation of Tissue Components" by Dr. H. George Mandel; "The Formulation of Detergent Bars" by John McCutcheon; "The Use of Infra Red Spectroscopy in Studying the Composition of Essential Oils" by Dr. C. L. Teitelbaum; "Skin Problems of the Older Woman" by Dr. Alice E. Palmer; "The Role of Ultraviolet Absorbers in Cosmetics" by Dr. F. E. Woodward and "Nitrogen as Propellant in Pressure Packaging" by H. R. Shepherd.

EVALUATION of the INHALATION SAFETY of COSMETICS*

BY HENRY J. HORN, M.D., HAZELTON LABORATORIES, FALLS CHURCH, VA.

The purposes of this paper are (1) to present an outline of the pulmonary mechanism and to point out the possibilities of systemic absorption of various chemicals via the pulmonary route, (2) to present briefly the principles involved in determining the inhalation toxicology of materials and finally, (3) to relate these entities to the problems facing the cosmetic industry.

Figure No. 1 presents a schematic picture of the anatomy of the pulmonary tree. Starting with the trachea, we have a major bifurcation into the two main stem bronchi. These, in turn, progress through multiple branching into the numerous bronchioles, which in turn branch into terminal bronchioles; these give rise to the respiratory bronchioles, alveolar ducts, air sacs, and alveoli.

Each alveolar duct has three to five dilatations, which constitute the air sacs, and the bays in the walls of the latter constitute the alveoli which are lined by a single layer of flattened epithelial cells cemented together. The alveolar walls contain elastic fibers and a rich network of capillaries. The blood in the capillaries is separated from the air only by the two delicate membranes: the alveolar wall and the capillary wall. Hence, there is easy diffusion of gasses from alveoli to capillaries and vice versa.

The first branching of the bronchioles are approximately 1.5 millimeters in length and 0.3 to 0.4 millimeters in diameter. The terminal and respiratory bronchioles are from 0.2 to 0.5 millimeters in length and of about the same diameter as the bronchioles. The pulmonary alveolus, which is the unit involved in the active respiratory process, is semi-globular in form and about 0.075 to 0.125 millimeters in diameter. It has been estimated that there are approximately 750,000,000 alveoli in the lung. The total estimated epithelial surface of the lungs is approximately 70 square meters, of which about 55 square meters is active respiratory tissue. *This is approximately 25 times the surface area of the skin.*

Under normal conditions, the respiratory exchange (tidal volume) is approximately 500 milliliters. That is, at each respiration we inspire approximately 500 milliliters and expel the same amount on expiration. The total respired volume would then be the tidal volume times the number of respirations per minute. If we were to assume approximately 20 respirations per minute, this would mean that the total minute volume would be 10,000 milliliters or 10 liters per minute, which is approximately equivalent to 10 quarts per minute. It can be seen that, even under normal conditions, an extremely large quantity of air is moved in and out of the lung in a relatively short period of time.

Potentially toxic chemicals in the atmosphere may be either in the form of a vapor or an aerosol. Synonyms for aerosol are smoke, fog, mist, and dust. An aerosol consists of particles whose size is less than 50 microns in diameter although those which most readily enter and settle in the lung are 0.3 to 1.2 microns in diameter. Since the absorption of the chemical from the lungs depends upon many factors, it has become the practice in inhalation toxicology to speak only of the concentration of the chemical in the air. To determine actual dosage would require a knowledge of the concentration in the atmosphere, the rate of absorption by the lung, length of exposure and the rate of respiration (minute volume).

To determine accurately the absorption of the chemical into the blood stream, the difference in concentration of the chemical in the inspired air and the concentration in the expired air, as well as the minute

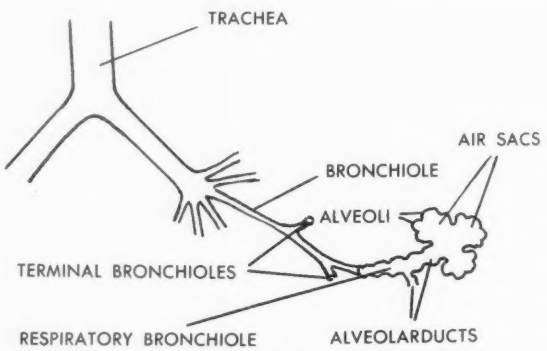


Figure 1

*Reprinted from the Proceedings of the Scientific Section of the Toilet Goods Association, Inc., No. 29, June 1958.

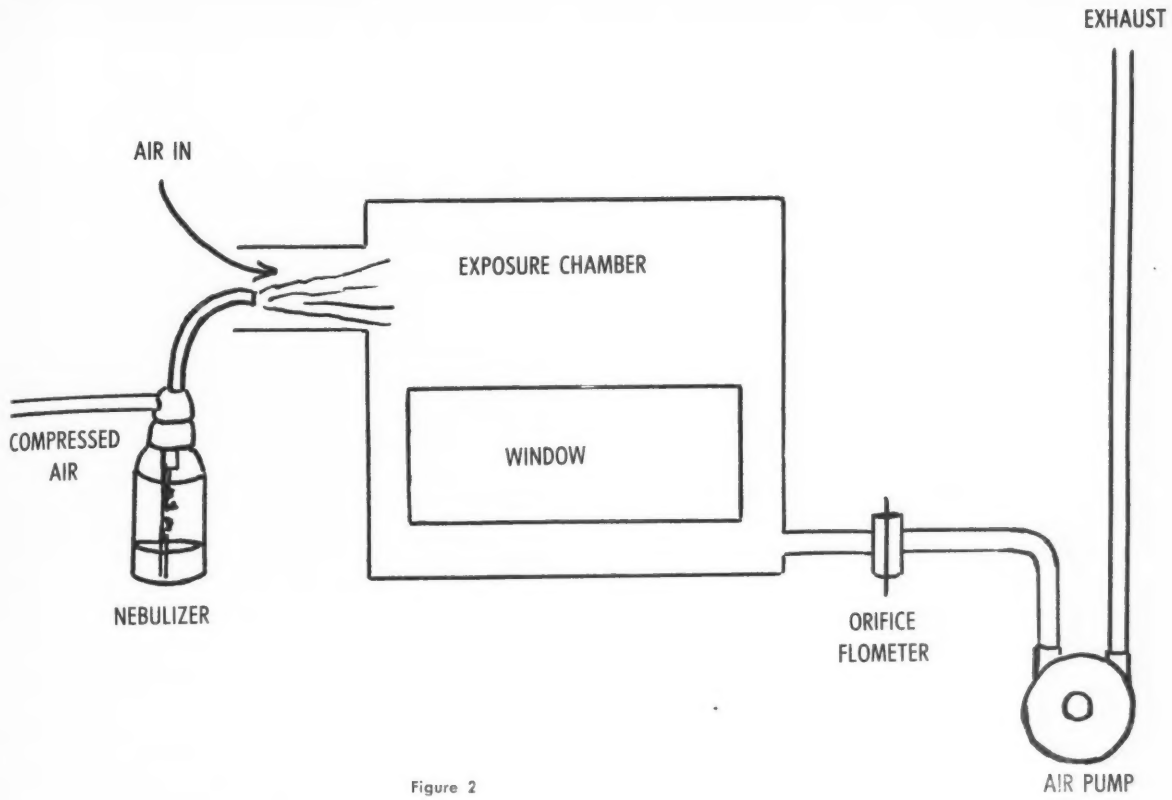


Figure 2

volume must be measured. These values are usually very difficult to measure. It, therefore, becomes readily apparent that it is extremely difficult to express or to relate, in a simple and direct fashion, the concentration of a chemical in the atmosphere to the actual dosage which is being administered. In contrast, it is very easy to express the dosage after oral administration in terms of grams of chemical per kilogram of body weight. In order to overcome the variable relationship between atmospheric concentration and human dosage, it has become common practice in the field of inhalation toxicology to use a different parameter than dosage. This parameter is simply the atmospheric concentration expressed either in milligrams per liter, grams per cubic meter, or parts per million. Because of the variable factors correlating dosage with atmospheric concentration, it becomes diffficult to compare inhalation studies directly with oral, intraperitoneal, or intravenous studies. However, by rule of thumb, one can estimate the inhalation dosage by making assumptions concerning the extent of absorbability of the material by the pulmonary mechanism. For example, it may be assumed that the quantity absorbed is approximately one-half of the quantity of chemical in the total minute volume. It is apparent that the total dosage received via the inhalation route is a function of time as well as concentration. The longer a person is exposed to an atmosphere containing a particular chemical, the greater the quantity of chemical breathed, and hence the greater the quantity absorbed.

Experimental Equipment

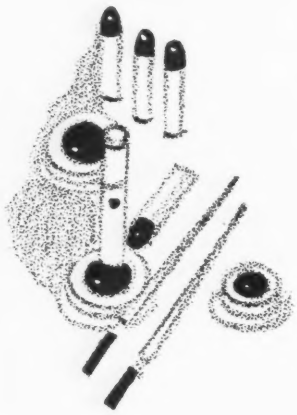
Now that we have reviewed some of the biophysical relationships involved in inhalation exposure, let us turn our attention to the equipment that is necessary to investigate the inhalation toxicology of a specific chemical. In order to expose animals to an atmosphere containing a specific concentration of the chemical, it is necessary to generate this artificial environment in an exposure (gassing) chamber.

Figure No. 2 presents schematically the arrangement of a dynamic exposure chamber necessary for these studies. The system consists of the exposure chamber proper with a suitable exhaust pump for keeping a constant flow of air moving through the chamber to supply the animals with oxygen and to keep the humidity and temperature within the chamber at reasonable levels. In addition, the system is equipped with a flowmeter so that the rate of air flow through the chamber can be constantly observed and maintained. Suitable devices are installed at the inlet to the chamber to generate the necessary test atmospheric conditions. The chemical is mixed with the larger volume of ingoing air to the chamber and, because of rapid diffusion and turbulence, will become thoroughly mixed in the exposure chamber. Figure

(Continued on page 110)

TESTING AND EVALUATING PERFUME COMPOUNDS IN COSMETIC PREPARATIONS*

BY VICTOR DIGIACOMO and WALTER WYNNE, GIVAUDAN-DELAWANNA, INC.



The subject of our discussion is of vital interest to the toiletries manufacturer when we consider the importance of the perfume in the finished product. And yet, in spite of the vital role that the fragrance plays in the cosmetic, insufficient time is allowed by the manufacturer, in many cases, for the proper testing of the perfume compound in the medium in which it is to be used. This lack of proper and complete evaluation of the suitability of the perfume blend for the particular toiletry involved leaves unanswered several questions, the answers to which are needed to determine whether or not the product, as packaged, will stand up during normal shelf life and consumer use.

We must know whether or not the perfume ingredients, individually or in blends, are compatible with the raw materials used in the cosmetic base. Will the perfume remain stable under normal shelf life conditions or will it decompose and cause coloration, discoloration or other difficulties? All of these questions, and others, must be answered before the perfumed toiletry is ready for the retailer's shelf.

This, today, is no easy task. There are many new basic ingredients being introduced which require reformulation of the cosmetic even after years of successful marketing. Existing raw materials are being constantly improved by their producers and new derivatives are being developed to make cosmetic formulation easier and better. Furthermore, the trend is towards a greater use of perfume to meet the demands of an odor-conscious market and higher concentrations of perfume blends are being used in the modern toiletry.

In addition to the above, experience has proved that many perfumes are inadequately tested by the manufacturer before they are incorporated into the finished product. Too often, the perfume is selected just before the product is launched without adequate time being allowed to study the problem of the compatibility of the fragrance with the cosmetic product or with the packaging medium being used. Since there are many incompatibilities which become apparent only as a result of testing or after a period of shelf life, this practice sometimes proves completely unsatisfactory.

This situation prompted us to enter into a research program which had two basic objectives. First of all, we would be able to determine the best method for testing the effects of a perfume compound on a cosmetic medium. Secondly, we could actually ascertain the effect of individual and combined perfume chemicals in various cosmetic mediums and determine the frequency of incompatibilities of these individual and blended perfume ingredients when incorporated into a cosmetic base. This program was carefully laid out in advance and all procedures were uniformly set up so that after completion of our initial work we would have evaluated all known perfume components in several media, alone and in blends. We have by no means completed our work since this type of evaluation and testing is a continuing procedure and as newer materials—both cosmetic and perfume—are developed, additional tests become necessary. We have, however, reached a point in our research where a report on our findings would be of interest to the toilet goods manufacturer.

Selection of Test Materials

At the very beginning of our program, a selection was made from among the many and varied toiletries available, and a total of more than thirty different preparations was selected for use in the actual tests. We cannot, of course, due to time limitations, list all the different formulations that were actually used, but we will mention the various cosmetic and toiletry groups that were included.

Both soluble and insoluble bath oils were tested using a perfume concentration of 3 per cent in the

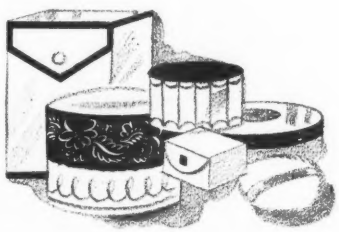
*Reprinted from the Proceedings of the Scientific Section of the Toilet Goods Association, Inc., No. 29, June 1958

former and 30 per cent in the latter. A water softener, sodium sesquicarbonate, and a popular anionic foam producing agent were combined in the bath salts with a concentration of 1 per cent of perfume.

A cleansing cream, astringent cream and a regular sodium stearate vanishing cream, all containing 0.3 per cent of perfume oil, made up part of the cream group. In formulating these cosmetics, we tried to use the same raw materials generally found in similar type products marketed to the consumer. The cleansing cream contained glyceryl monostearate, lanolin and mineral oil and had a pH of 8. The astringent cream contained both a non-ionic and anionic emulsifer with chlorhydrol as the active astringent material and G-11® (hexachlorophene U.S.P.) as the active deodorizing ingredient. The cream's pH: 4.2.

Liquid deodorant colognes and solid deodorant cologne sticks, both containing hexachlorophene, were included in the tests with the latter containing 3 per cent and the former 2.4 per cent of perfume oil. The pH of the solid deodorant cologne was 8.5, and the concentration of the sodium stearate soap was about 5.5 per cent.

The hair dressings used included the alcoholic Ucon® type preparation with 0.5 per cent of perfume



oil; the liquid cream oil with a perfume oil concentration of 0.25 per cent, and a high mineral oil content; and a water soluble Ucon® type in which 0.5 per cent perfume oil was used.

In our lipstick group, the colors were made up of D&C Red #21 and D&C Red #27 with two insoluble color pigments. The liquid portion of the lipstick base contained caster oil, lantrol®, satol and polyethylene glycol #200 which was solidified with candililla wax. Perfume oils were tested in a concentration of 1 per cent. The liquid make-up used was an emulsion of deltyl® extra, cetyl alcohol, veegum and water, emulsified with triethanolamine stearate, and having a pH of 8. This cosmetic also contained a 12 per cent mixture of insoluble pigments and 0.3 per cent of perfume oil.

In the powder group, face powder and powder for sachet bags were included. The face powder contained talc, titanium dioxide, zinc stearate and magnesium carbonate with 1 per cent perfume oil. The sachet powder contained 80 per cent talc, 10 per cent microcel "C" and a 10 per cent concentration of perfume oil. Another grouping utilized was shave products. The aftershave lotion was a hydro-alcoholic solution containing 0.1 per cent of hexachlorophene and 0.5 per cent perfume oil. The brushless cream was a typical stearate cream with deltyl® extra and cetyl alcohol with a perfume concentration of 0.3 per cent. The pH of the cream: 7.2. The pre-electric shaving preparation was an alcoholic solution of deltyl® extra containing hexachlorophene and 0.3 per cent perfume oil.

Soaps were tested using both standard sized cakes and tablets both having a perfume concentration of 1 per cent. Cream and soap shampoos were also included with the former having a perfume content of 0.5 per cent and the latter of 0.75 per cent. A standard detergent with 0.5 per cent of perfume was also included. We also used depilatories and hair waving lotions, both containing thioglycolates, in the test program.

Control samples of each toiletry formulation without perfume were tested under the same conditions as the perfumed test samples in order to determine the effect of the perfume on the stability of the various emulsions.

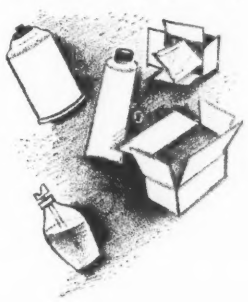
To determine the usability of perfume materials in fragrant blends for cosmetic application, it was necessary to test all the known basic perfume ingredients. We, therefore, included in our test essential oils, absolutes, resins, isolates, synthetic chemicals and other materials, all of which were evaluated individually and in blends.

The perfume ingredients involved were incorporated into the various toiletries previously enumerated to ascertain their stability and compatibility characteristics in each of the bases involved. The actual test methods will be enumerated below.

Throughout the test, we used only bases presently being utilized for toiletries on the market, and the materials were tested in the same type of package in which they were being sold including powder boxes, jars, polyethylene containers, aerosols, bottles, tubes, paper wrappings, etc.

Individual chemicals which had been tested were also evaluated in compound blends even though each proved to be compatible with all cosmetic bases involved. It has been proved entirely possible that, although individual ingredients showed good compatibility and stability in a cosmetic formulation, combinations of fragrance components may react in a completely different manner, resulting in instability and incompatibility.

(*Continued on page 113*)



COURTESY CHAS. PFIZER & CO., INC.

CHEMICAL INTERACTIONS OF THE WATER-SOLUBLE VITAMINS

A Review

BY STANLEY SCHEINDLIN, D.SC.
RESEARCH LABORATORIES, THE NATIONAL DRUG COMPANY, PHILADELPHIA, PA.

In the body, the water-soluble vitamins work harmoniously to maintain the dynamic equilibrium which is the good health of the organism. So often are all these vitamins prescribed together, and so commonly are they thought of as a group, that the idea of incompatibility among them may come as a surprise. Yet it is only necessary to consider the chemistry of these vitamins to realize their potentialities for interaction. First, they are all polyfunctional organic compounds. Second, their role in the body is that of coenzymes—the chemically reactive portions of various enzymes. It might, therefore, almost be expected that these vitamins could react with each other. Considering them all as members of the same "family", their inability to get along is quite human.

The stability characteristics of the individual vitamins are well-known, and are standard information in pharmaceutical textbooks. Thus, anyone can easily find out the effect upon any vitamin of such factors as heat, light, or pH. But the effect of *other vitamins* upon a given vitamin is not readily available in works of reference. Few prescription pharmacists and very few non-pharmaceutical scientists are even aware that such effects exist. Nevertheless, certain vitamins do react with each other. These reactions are obviously of economic importance to manufacturers, prescription pharmacists, and consumers. They are also of great theoretical and practical interest not only to pharmacists and pharmaceutical chemists, but also (as will be shown) to biological scientists and workers in fields unrelated to medicinals.

Complex Formulation with Niacinamide

The increased solubility of riboflavin in solutions of niacinamide has long been of practical use in the

1 The prefixes chloro- and verdo- both mean green. While these are apparently used interchangeably in the reference cited, Kuhn and Strobele[12] believe them to be two distinct compounds.

manufacture of vitamin products. This solubilization effect is considered to be evidence of complex formation between the vitamins, a "complex" being a more or less stable molecular addition compound.

More recently Taub and Lieberman[1] found evidence of solubilization of folic acid by niacinamide. A 10 per cent solution of the latter maintained a concentration of 5 mg. per mil. of folic acid in solution at pH values ranging as low as 5.6. The normal solubility of folic acid at pH 6.0 is 2 mg. per ml.

A complex of 1 molecule of niacinamide with 1 molecule of ascorbic acid has been prepared in solid form. Its melting range is 141.7-144.7°. It has been claimed that the complexed ascorbic acid is more stable than ascorbic acid *per se* in certain multivitamin compositions[2].

Folic Acid Incompatibilities

When folic acid became available in 1947, the natural tendency of manufacturers was to round out existing multivitamin formulas by adding this new vitamin. It was soon discovered, however, that folic acid activity was being lost—particularly in liquid preparations. Study of combinations of folic acid with other individual vitamins revealed that a number of vitamins were capable of destroying folic acid at room temperature, at 42°, and even at 5°. These vitamins were ascorbic acid, thiamine, riboflavin, and calcium pantothenate. Pyridoxine, niacinamide, and pantothenyl alcohol did not affect folic acid stability[3].

One of the earliest references to folic acid instability came, curiously enough, from the field of bacteriology.

Koft and Sevag[4,5] while studying the role of folic acid and PABA in the inhibition of *Lactobacillus arabinosus* by sulfonamides, noted a loss of folic acid in a neutral culture medium containing (among a variety of other substances) six of the B-complex vitamins. Decomposition of folic acid manifested itself in a liberation of diazotizable amine.

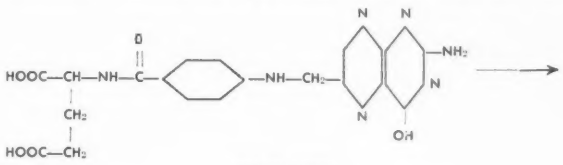
It is interesting to conjecture how much bacteriological and biochemical research has been done using media in which decomposition of folic acid or other vitamins had occurred unsuspected by the researchers. How would this affect the validity of the results obtained in such work?

Beginning in 1948, Lederle Laboratories undertook the support of research aimed at discovering the chemical reaction which occur between folic acid and other vitamins, without reference to stablization or other developmental problems. Under this program, carried out at The Philadelphia College of Pharmacy and Science, folic acid-ascorbic acid reaction and the folic acid-riboflavin reaction were studied.

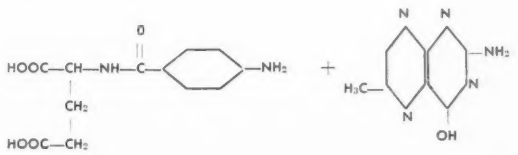
Folic Acid Ascorbic Acid

In acid medium the folic acid molecule is cleaved by reducing agents, producing *p*-aminobenzoyl glutamic acid (PABG) and 2-amino-4-hydroxy-6-methyl pteridine.

In view of this well-known reaction, Scheindlin and Griffith[6] formed the hypothesis that ascorbic acid, a



FOLIC ACID



PABG

reducing agent of some power, might cleave folic acid in the same way. Experimental evidence confirmed this hypothesis, and showed also that the free aromatic amino group thus formed undergoes further reaction with ascorbic acid or its oxidation products. Folic acid-ascorbic acid solutions were studied at two different pH levels at 42°. The reaction was found to occur in two stages:

1. Cleavage of the folic acid molecules yielding a pteridine as well as PABG.

2. Destruction of the free amino group of the PABG by ascorbic acid or its oxidation products.

The decomposition of folic acid proceeded more rapidly at pH 3.0-3.3 and more slowly at pH 6.5-6.7. At the latter pH only about 20 per cent of the folic acid was cleaved in 4 weeks at 42°.

COURTESY LEDERLE LABS.

No attempt was made to determine whether ascorbic acid *per se*, its oxidation products, or both are responsible for the cleavage of folic acid. This would be an interesting addition to our knowledge of the reactions.

Folic Acid—Riboflavin

Biamonte and Schneller[3] found that the decomposition of folic acid by thiamine and riboflavin involves cleavage at the methylene linkage, liberating an aromatic amine, presumably *p*-aminobenzoylglutamic acid (PABG).

Scheindlin, Lee, and Griffith[7] carried out a detailed study of the reaction between folic acid and riboflavin. Solutions were prepared containing the two vitamins in equimolar ratio at pH 4.0. Pyrex-redistilled water was used, to minimize possible effects from metallic ions.

Early in the investigation a startling observation was made. Folic acid appeared to be decomposed faster at room temperature than at 42°. One solution, after 3 days at room temperature, contained 40.0 per cent free PABG, whereas 2 weeks at 42° generally produced less than 40 per cent decomposition. Further study showed conclusively that the rapid rate of decomposition at rom temperature was due to the combined effect of light and riboflavin. This was the more remarkable because the reaction mixtures were all stored in amber bottles and exposed to electric light of low intensity, receiving very little sunlight. Under these conditions folic acid in solution by itself did not decompose.

(The amber glass employed transmits no more than 5 per cent of all wave-lengths below 450 mμ, but does transmit much of the visible light above 500 mμ. This visible light, apparently, was responsible for the cleavage of folic acid).

Little riboflavin was consumed in this reaction. Starting, as noted above, with the two vitamins in equimolar ratio, destruction of 100 per cent of the folic acid was accompanied by loss of only 16-24 per cent of the riboflavin content.

The experimental findings of Scheindlin *et al.*[7] may be summarized as follows:

a. Under the combined action of light and riboflavin, folic acid undergoes rapid oxidative cleavage with the formation of PABG and a carbonyl compound, presumably 2-amino-4-hydroxy-6-pteridine carboxaldehyde.

b. This reaction occurs more rapidly at pH 4.0 than at pH 6.5.

c. The reaction is retarded, but not halted, by exclusion of air.

d. As little as 50 mcg. of riboflavin per 100 ml. of solution can accelerate the complete cleavage of 10 mg. of folic acid, when exposed to a light intensity which in itself has no effect on folic acid.

The above authors viewed the role of riboflavin as that of a photo-sensitizer and a hydrogen acceptor. The fact that the reaction is slowed but not stopped by exclusion of air indicated that air is not the source of oxygen for the primary oxidation but supplies oxygen for the regeneration of riboflavin from its reduced form, leuco-riboflavin. The reduction of riboflavin to its leuco (dihydro) form being reversible, no loss of microbiological activity will result.

Tansey and Schneller[8] subsequently confirmed the fact that the reaction between folic acid and riboflavin is accelerated by light and proceeds even when the solution is kept in amber glass containers. They found also that the folic acid could be stabilized in the presence of riboflavin and other B complex vitamins by 0.02−0.05 per cent of such antioxidants as NDGA, butylated hydroxyanisole, and ethyl hydrocaffeate[9].

Ascorbic Acid—Riboflavin

The action of riboflavin on folic acid is analogous to its action on ascorbic acid. The latter reaction, discovered in 1937, is responsible for th rapid loss of ascorbic acid which occurs in milk. Hopkins[10] found observable acceleration of vitamin C oxidation in diffused daylight when as little as 70 μg. of riboflavin per 100 ml. of solution was present. He suggested that the mechanism by which riboflavin promotes the reaction involves the activation of oxygen.

Hand, Guthrie, and Sharp[11] studied the effect of riboflavin on the photo-chemical oxidation of ascorbic acid. These workers determined that air, light, and riboflavin are all required for this oxidation. Since neither ascorbic acid nor oxygen can absorb the visible light which filters through heavy glass bottles, this light has no effect on ascorbic acid. Riboflavin, however, absorbs blue light and this according to Hand *et al.* catalyzes the photo-oxidation of ascorbic acid.

There is a reverse side to this picture—namely, the destruction of riboflavin by ascorbic acid. Injectables containing thiamine, riboflavin, B_6, niacinamide and ascorbic acid are generally solutions having high solids content, sealed in ampuls under a small air space, and protected from light. These conditions favor the reduction of riboflavin to a stage intermediate between riboflavin and leuco-riboflavin, the green semiquinone—type compound known as chloroflavin or verdoflavin[1]. On aging, the solution may turn green, or chloroflavin may crystallize. Precipitation of chloroflavin is favored, according to Siemers[13] by high solids content, high thiamine concentration, and pH above 4.0 when ascorbic acid is present.

Brumfield and Gross[14] disagree with the view that ascorbic acid reduces riboflavin to chloroflavin. (Such reduction is reversible; chloroflavin can be converted to riboflavin by warming and shaking with air). Their findings lead them to believe that a more drastic irreversible reaction occurs. Gambier and Rahn[15], on the other hand, support the view of Siemers.

(*Continued on page 114*)

Packaging and Selling

Abbott's First Aerosol

is a topical anesthetic, Aerosol Tronothane Hydrochloride, for the relief of surface pain, flash burns, sunburn, and itching. Heart of the dispenser is the Micro-Mist valve, made by the Risdon Manufacturing Co. The filler was Continental Filling Corp.

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THE INVISIBLE SELL and the Pharmaceutical Industry

BY TED KLEIN
PUBLIC RELATIONS DIRECTOR, PAUL KLEMTNER & COMPANY, INC.

Retail sales of drugs last year reached an all-time high of over three billion dollars. Unequivocally, these figures attest to the progress medical research has been making. However, these same figures tell a story of a big business making a substantial profit from selling drugs. The pharmaceutical industry is now beginning to realize that along with these big sales, often come big problems.

Many of these problems are caused by poor communication between the industry and the public. Traditionally, the pharmaceutical business has stayed away from talking about its work.

But what attitudes has this indifference to the public created? What does the public think about the cost of drugs, for instance? One of the first acts of the new Health Information Foundation was to conduct a study of the public's attitude on this subject. A major conclusion was that people at large believe that drugs cost too much.

In actual fact, a close look at the prescriptions filled last year show the average price to be about $2.65. Not more than a carton of cigarettes! Certainly a nation that spent $300,000,000 last year for chewing gum would be shocked if it compared that luxurious figure to the true figures being spent for its health needs. But unless this comparison is made for the public, it will go on thinking that drugs cost too much.

Some leaders of the pharmaceutical industry are aware of this growing problem in the attitudes of their customers. Here is a comment by one of them: "They say we're a bunch of robbers. Did you ever ask anyone what he thinks of the price of prescriptions? . . . What's wrong? We have failed entirely to sell the present and probably future system of medical care in this country to the average person."*

Physicians also know what "Business Week" magazine (circulation 80,000) reported on February 22nd of this year. "Most people you meet think that the U. S. medical profession is formed of men who are avaricious, self-seeking, inhuman, lackadaisical and hypocritical." In order to visualize these concepts, the editors saw fit to print a full-page cartoon under the title of "Bray's Anatomy, a layman's view of the Doctor 1958." It was a vicious reflection of public opinion. It reflects not only on the physician but on the pharmaceutical industry.

*John MacCarney, Director of Professional Relations, Parke, Davis, from a talk at a 1955 seminar.

The author of the "Business Week" article stated that "affection has just about gone, and respect dwindled. Even those who swear by their own physician's decency and honesty 'know' that most doctors are rich as Croesus, drive nothing but Cadillacs, persistently cheat on their taxes and are always boosting their already sky-high fees."

A check of other business magazine articles printed last year failed to show any reports which established the other side of the story. Is it that only the sensational and vituperative can get into print? Or is it that articles on the dedication of the vast majority of our physicians are not placed with the same care? What about a story on the industry, which details the results of the $127 million spent on research each year?

The American Medical Association knows that it must help get some of the misconceptions cleared up. In a report to its members, the AMA stated that in 1956, 351 articles on medicine and health were placed in consumer magazines, each with over a million readers. This is certainly a laudable accomplishment. However, few of the articles were written from the point of view of the pharmaceutical industry.

It is interesting to note that, for the first time in its history, the AMA invited the public as well as physicians to see and hear highlights of the 1958 Annual Meeting in San Francisco this June. The programs were produced by the AMA in cooperation with Merck Sharp & Dohme, one company that is convinced there is value in paying for such a series of public service programs. This type of public information activity on the part of a pharmaceutical company

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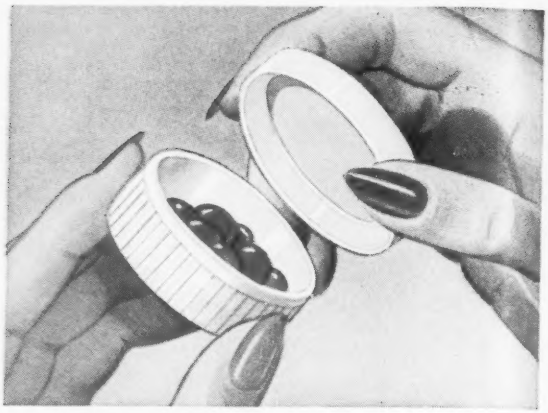

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Physicians Have Their Complaints

Many physicians believe that pharmaceutical companies spend far too much in the promotion of their products. The complete figures are unavailable on what companies do spend for all forms of promotion, but in 1957, journal and direct mail advertising topped $85,000,000. That is about $600 for every physician.

In May, "Medical Marketing" reported that a physician in Youngstown, Ohio told detailmen at a meeting that he thinks prices of drugs could be reduced 10 to 20 per cent if manufacturers would stop sending samples and direct mail to physicians. This inaccurate statement certainly should indicate the need for the industry to do something to answer these charges.

Not enough attention has been directed to explaining that *new* drugs demand *new* means of postgraduate education. The advertising industry which helps to provide this material to the physician is constantly trying to refine its techniques of comunication so that less time and money will be wasted. But how often does its story get put across with the same directness as that of its critics?

What Can the Pharmaceutical Industry Do?

The fact that our industry has been reporting a large profit margin in recent years also places it in a position that is vulnerable to attack. The recent Federal Grand Jury indictment of five important pharmaceutical companies for an alleged violation of the Sherman Anti-Trust Act can do nothing but harm to the industry. The details of the indictment have been broadcast across the nation. No industry can afford to antagonize its customers. Certainly the pharmaceutical industry, composed for the most part of dedicated individuals, is not happy to see public antagonism directed towards its work. The time for quiet anonymity is past. Public information is the best sort of public relations.

The individual companies, as well as the industry as a whole, are eager for the real facts to reach the public. They are equally eager to see a more congenial response from the people they serve. But they have to do something to start the ball rolling in this direction.

Whether this job of telling the story should come from the total industry or step by step from individual companies, is open to discussion. But for the average man, it is less important *who* tells him than the fact that he *is* told.

The Public Relations Society of America, the elite public relations fraternity, lists only nine pharmaceutical companies* represented with a member (out of its 2800 members). This is not an indictment, but rather an indication that new thinking is needed. If there is this small interest, little can be done to get the industry's story told.

The lack of interest in public relations may be explained on the basis that too few in top management have felt that it was needed. A source of confusion is the difficulty in distinguishing *publicity* from public relations.

Publicity is a tool of public relations, a separate entity. It involves getting a story printed about a particular product or individual. It can also mean a whole campaign of many stories in magazines, on radio and TV, and even in gossip columns of daily newspapers. This is a *part* of public relations, but a small part.

How Can Public Relations Help?

Robert Heilbroner, writing in "Harper's Magazine," June 1957, called public relations "the invisible sell." Many practitioners of the art feel that if you can recognize their work they are failing at their jobs.

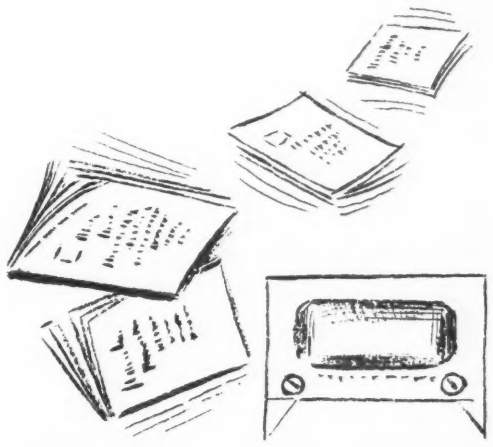
Part of the invisible sell in pharmaceutical public relations should be to get the public to think favorably of the industry, company by company. These companies do maintain the highest standards, and the public should know what these criteria are.

No industry can get a total over-all public relations job accomplished unless each individual firm does its part. The National Institute of Iron and Steel spends a great deal of money on public relations, but U. S. Steel alone spent over $1,000,000 last year.

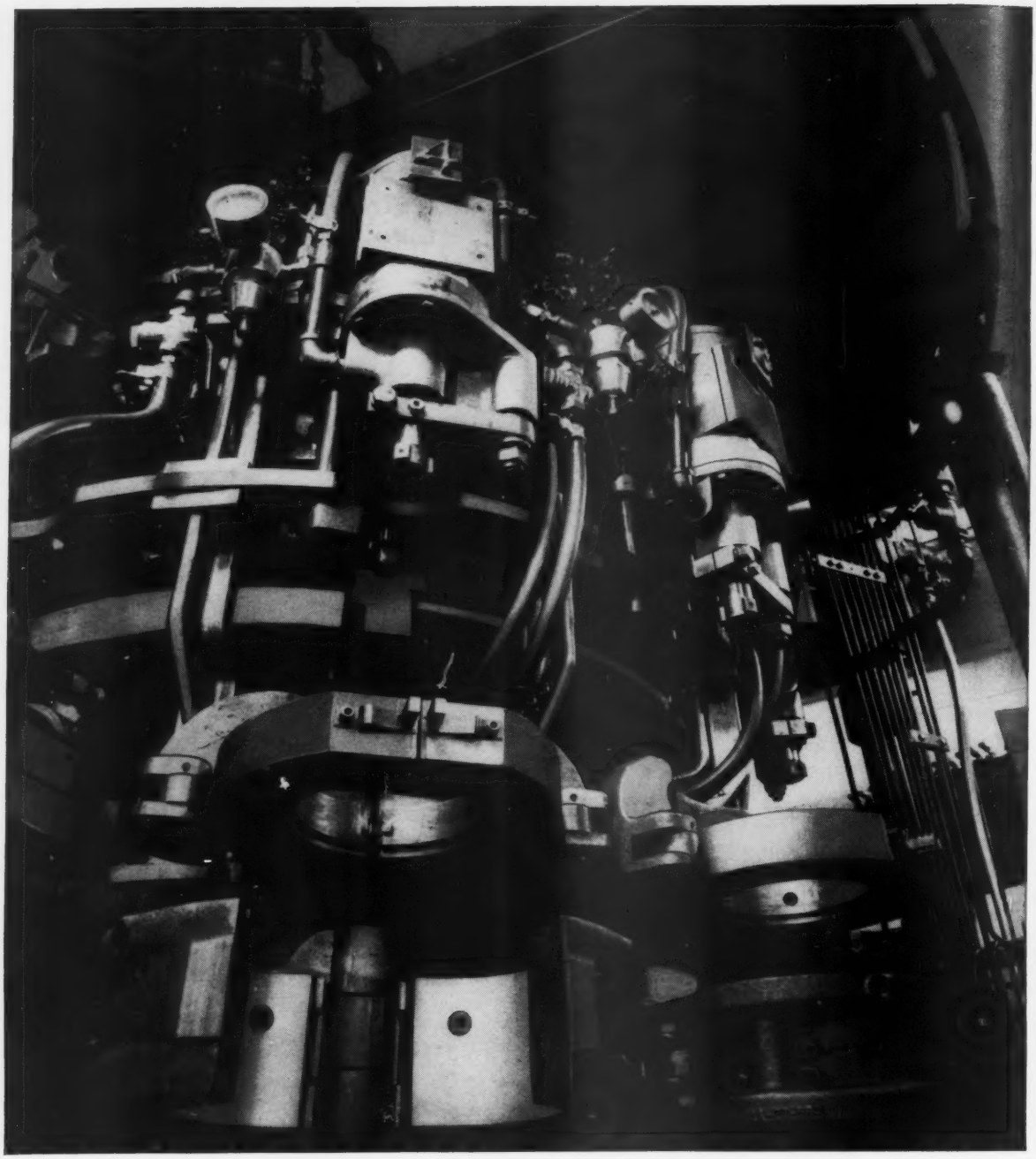
Whenever a sincere attempt is made by the pharmaceutical industry or an individual company to sell the idea that drugs are good, physicians are dedicated and honest, and pharmacists important partners in health, the results are usually favorable. And yet the widespread enthusiasm that greeted SKF's program on the activities of volunteer American physicians around the world did little to encourage other companies to get into network TV with similar programs.

The recent heart operation performed in New York on TV was seen by over 2,100,000 individuals. The

(*Continued on page 118*)



*Abbott, Baxter, Ciba, Lederle, Lilly, Mead Johnson, Pfizer, Schering, Smith, Kline & French.



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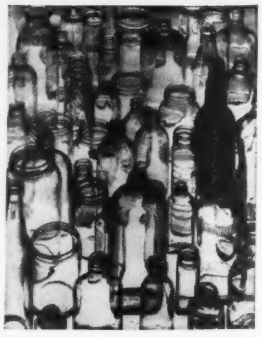


KNOX GLASS INCORPORATED · KNOX, PENNSYLVANIA

MARKET FOR CHILDREN'S TOILETRIES

Tom Fields' Tinkerbell

Helene Pessl's Little Lady

Lentheric's Tweedie

Of the 86 million females in the United States, sixteen and a half million are between the ages of three and twelve. Arnold Perlman, president of Helene Pessl, Inc., and creator of the Little Lady line of children's toiletries, estimates that about one-third of the girls in the three-to-twelve age group use Little Lady products. He bases this estimate on an analysis of 1957 sales.

The $2 million worth of Little Lady Toiletries consumed in 1957—triple the volume of ten years ago—represents not only an incredible progress rate for his own firm, but re-emphasizes Mr. Perlman's position as pioneer and developer of a completely new market . . . one that only fifteen years ago was nonexistent.

Joining Helene Pessel, Inc., then a small women's cosmetics firm, as a partner in 1944, Mr. Perlman realized that there was a potential market for toiletries especially prepared and designed for children toiletries.

By 1948, it became clear that Little Lady was not only developing its own steady following but was spearheading a completely new market. In 1953 several top cosmetics houses began packaging a special children's line, particularly directed toward Christmas sales. This trend has continued, and many nationally advertised cosmetics houses are placing an increasing emphasis on their children's lines.

Today, with 80 products in the line, Little Lady is sold by 25 salesmen to over 5,000 accounts throughout the United States. Cuba, Puerto Rico, Venezuela and other South American countries import Little Lady Toiletries, while Canada manufactures Little Lady Toiletries through a licensing program. Recently Mr. Perlman registered his trademark in Europe, and is establishing distribution in the Benelux countries.

Little Lady is exploited on a year-round basis with birthday party promotions in department stores, advertising and publicity, as well as point of sale merchandise spurring sales for special occasions—birthdays, graduations, and seasonal opportunities—Easter, camping and back to school.

Packaging the merchandise as a line encourages repeat as well as multiple sales. Immediate identification encourages consumers, who have had past success with the gift item, to purchase the same or similar items for other special occasions.

While accurate figures are not available, it seems certain that total sales in the children's toiletries field account for a growing percentage of cosmetics volume yearly. Though it is still too early to project the figures, there is no question but that this increasing market has accounted for, and will continue to account for growing sales in adult cosmetics for years to come. Youngsters who are now making toiletry articles a basic part of their daily routine are certain to be a major segment of tomorrow's cosmetic buyers.

Give YOUR PRODUCT the look of elegance with *Lambert* engraving

There is no substitute for engraving and engine turning when you wish to add a look of elegance to your product. But elegance and high cost are *not* synonymous with Lambert engine turning . . . for here in Attleboro we have coupled the art of single tool craftsmanship with our exclusive *multitool* process, to give you *quality in quantity*.

Quality-in-Quantity
engine turning
makes elegance practical

If you would like us to ornament a sample — to demonstrate how Lambert engine turning can make your product elegant in all but cost — please write enclosing several shells. There is no cost or obligation.

Lambert Engraving Company,
Attleboro, Massachusetts.

Packaging and Selling

Who's to Blame

Almost everybody today seems to have something disparaging and critical to say about salesmen. This is particularly true about retail sales people, but it is also becoming increasingly true of salesmen for every branch of industry. Every convention speaker and every business paper editor seems to have taken a turn at blasting the salesmen.

At a recent convention a leading sales manager stated, "Sales people across the country do not know their product nor do they have the ambition to try hard enough."

It must be admitted that salesmanship has suffered pretty badly during the last ten or fifteen years. It must be admitted that there is plenty of reason for criticizing salesmen today and probably this criticism will have a wholesome and beneficial effect.

At the same time, it should be pointed out that this decline in salesmanship which everyone admits and deplores is not entirely the fault of the salesmen.

During this period when almost everyone agrees that salesmanship has declined, there has been an almost overwhelming volume of oratory from business leaders pointing out that salesmen were no longer as important as they used to be. Self-service in the retail store has been declared the wave of the future in retailing and the manufacturer, aided and abetted by his advertising agency, has boisterously tried to take over for himself practically every step in selling.

During this period a great many retailers have completely abdicated every form of creative selling and have supinely allowed the manufacturer to assume this function.

Consumer advertising expanding by many billions of dollars in magazines, newspapers, radio and television has been purposely used by manufacturers with the ambition and determination to completely control their own market and in this way eliminate or minimize every form of selling between the home office and the consumer.

Sales folks behind the retail counter have been told openly and repeatedly that they were no longer very necessary, that they were costly and inefficient and that the true way to sell was by self-service and the impulse sale.

Manufacturers have not so openly told their own salesforce that they were no longer necessary, but the determined effort on the part of the manufacturer to secure what he fondly called a consumer franchise or a consumer brand demand, acceptance or preference made clear enough to the salesmen that the need for initiative and creative thinking on his part was declining and that in the manufacturer's eyes he was becoming an automaton for order taking.

Manufacturers are now beginning to feel sorry for themselves. They are not quite so sure about the overwhelming sales influence of the consumer franchise or consumer preference and they are now very eager for favorable sales help in the retail store and for energetic, creative selling by their own salesmen.

Sales people are human beings, no better, no worse than they used to be. We have a hunch that when they are told they are needed they will discover a change in mental attitude toward their services. Then we will find a noticeable change to good salesmanship once again.

Sexing Your Product

It looks as if a new word has been added to marketing vocabulary. According to an executive of Sheaffer Pen, the way to expand is to "sex" your products.

Apparently what sexing means is to add a new gender to your product. For instance, if you have a fountain pen, which is either mainly masculine or at least neuter, then do what this company did and bring out "Lady Sheaffer Pens." According to this pen executive this will give you a chance to open up all sorts of additional retail outlets—in this case cosmetic counters, fashion and jewelry shops.

Consumer Analysis

We have just received that thoroughly valuable market analysis called 'Consolidated Consumer Analysis' for 1958. This is the study each year made by 22 leading newspapers in 22 metropolitan markets.

Covering a variety of health and beauty products this survey gives, for 22 cities, the per cent of use for the last three years and the status of various leading brands.

An interesting table is the percentage of toiletry articles purchased in grocery stores in each of these cities during the last three years. The immediate

average of all these cities shows the buying of these stores have increased from 63.9 per cent of the people who buy some toiletry article in the grocery store in 1956 to the present percentage in 1958 of 66.7 per cent.

Television Cosmetics

Why does a cosmetic company merge with a TV company? That's what a lot of people in this trade are asking as a result of the Hazel Bishop merger with the C & C Television Corporation.

Perhaps the answer lies partly in the history of the C & C Television Corporation. This is not a television broadcaster, but originally a company which has acquired a lot of moving picture rights which they sold or leased to television companies. A little later somebody had the bright idea that it might be more profitable to exchange these moving picture rights for a lot of television spots instead of cash.

The C & C Television Corporation has a great deal of spot television time hanging around waiting to be sold. Apparently they figured that the best way to sell this would be to sell it to themselves. At least that's a good way to save sales commissions.

As far as Hazel Bishop goes, this has always been more of a television program than a cosmetic company. It was, in fact, a company that was created out of thin air on the basis of an advertising claim and a television audience. It has not, in many other ways, acquired characteristics of a true cosmetic operation.

While advertising has always been an essentially important factor in the cosmetic business, it must be said that in the last 10 to 15 years advertising has been playing a greater and greater predominantly essential part in building up a cosmetic business.

Let's hope for the sake of this industry that this trend does not continue, so that when people go into the cosmetic business, they start in first with a television campaign or an advertising campaign and then proceed from there to the package and last of all the product.

Recession, huh!

As further proof that this recession we are going through has very many weird characteristics, we quote from an owner of a San Francisco store: "Women are ready for a change. They are fed up with the 42 flavors of mink."

Table of Growth

The Glass Container Association has just printed an interesting tabulation of the sale of glass containers over quite a period of years. This strikes us as interesting from the primary viewpoint of showing how consistently this industry is growing. Since the glass container is a basic package of our industry, both in drugs and cosmetics, we suspect that these figures quite closely approximate the growth of the industry and the prosperity of each one of the years.

Below are the tables for glass containers in thousands of gross.

Glass Container Shipments—Domestic
For: Both Drugs and Cosmetics

	Total		*Total*
1957	35,230	1942	18,983
1956	33,371	1941	19,966
1955	32,794	1940	15,447
1954	30,058	1939	15,225
1953	28,924	1938	13,067
1952	25,259	1937	14,991
1951	25,419	1936	14,304
1950	25,706	1935	12,420
1949	21,165	1934	12,085
1948	21,311	1933	12,475
1947	20,766	1932	10,790
1946	25,963	1931	12,149
1945	23,629	1930	12,534
1944	31,633	1929	13,277
1943	32,360	1928	12,750

In Thousands of Gross

	Medicinal & Drug	*Toiletries & Cosmetics*
1957	22,654	12,576
1956	21,211	12,160
1955	20,521	12,273
1954	19,277	10,781
1953	18,710	10,214
1952	17,048	8,211
1951	17,575	7,844
1950	18,134	7,572
1949	14,562	6,603
1948	14,840	6,471
1947	14,523	6,243
1946	17,321	8,642
1945	15,486	8,143
1944	14,251	7,382

New Map

The new 1958 Distribution Map of the NWDA is now available at $1.50 each, postpaid. The Drug Trade Market Data Book, containing detailed reference material as to the number of drug stores, number of families in each county, etc. is also available at $2.50 per copy. These may be obtained from the National Wholesale Druggists' Association, 60 East 42nd St., New York 17.

Ethical Proprietaries

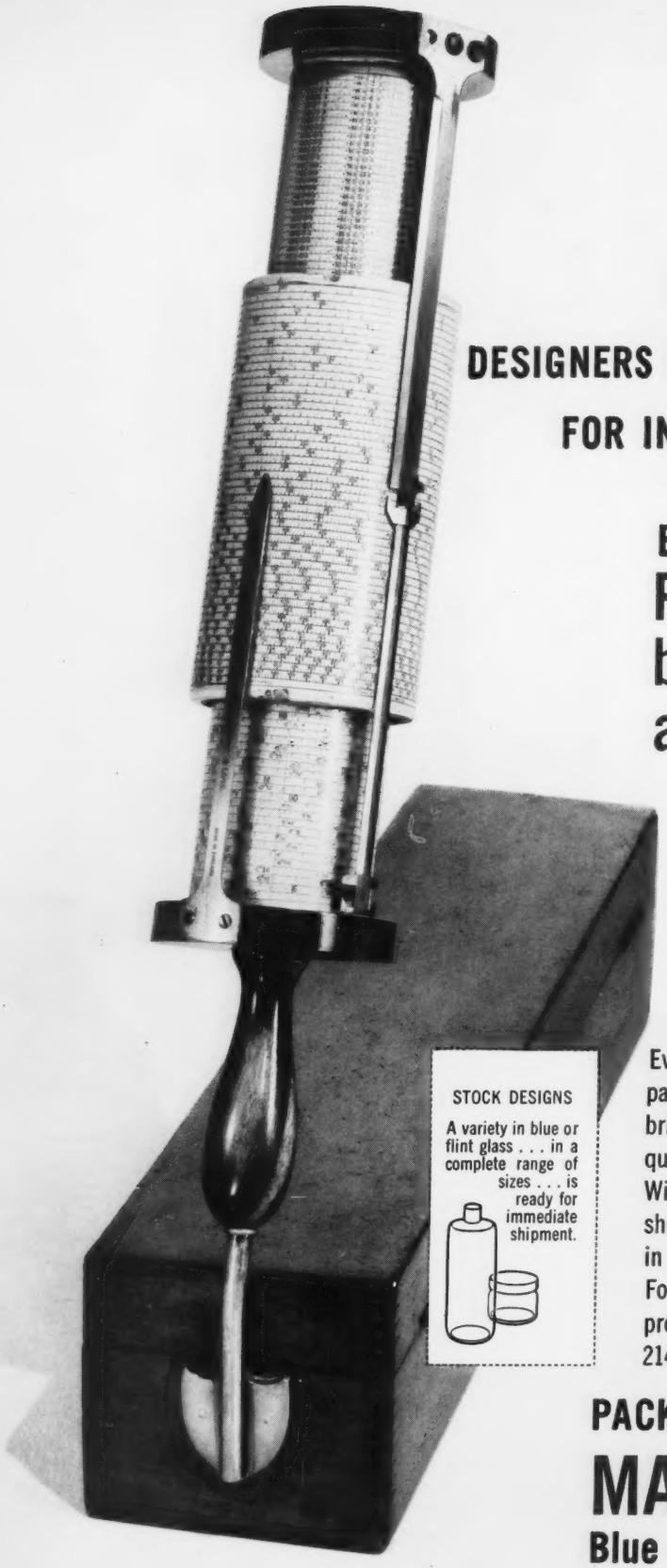
It's more than a trend; it's a fact that part of the industry known as the ethical manufacturers are moving in a broad front into the proprietary and cosmetic field.

Though not by any means among the first, Pfizer seems to be somewhat different in the way it is planning on a broad front. The first proprietary item, an aerosol foot preparation called Eez Spray Powder will be followed by from 25 to 30 possible products now

sheffield tubes

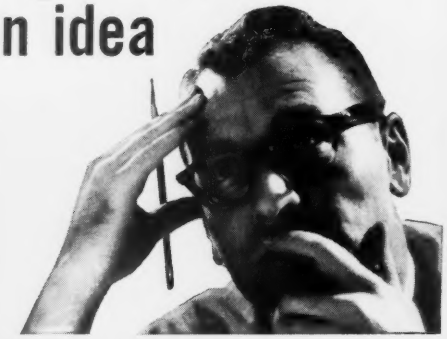
NEO-POLYCIN, PRODUCT OF PITMAN-MOORE CO., WIDELY USED FOR TOPICAL INFECTIONS IN INFANTS

Precious protection for infants! Sheffield Process Tubes used for Neo-Polycin provide absolute safety and maximum preservation...offer the greatest utility, convenience, and help build consumer acceptance. Sheffield collapsible metal tubes are *ideal* containers for hundreds of other successful products...medicinal, drug, cosmetic, industrial and household. Your product will sell *better* in a Sheffield Tube! Ask for facts, figures, samples, catalog. The Sheffield Tube Corp. (since 1850). Home office: New London, Conn. Sales offices: New York, Chicago, Los Angeles.



MARYLAND GLASS DESIGNERS USE THE FULLER CALCULATOR FOR INTRICATE COMPUTATIONS . . .

BUT ESSENTIALLY Package design begins with an idea



STOCK DESIGNS

A variety in blue or flint glass . . . in a complete range of sizes . . . is ready for immediate shipment.

Every craftsman knows his tools, but the creative package designer must do more—first he must bring an idea to life. An idea that says Yes to questions like: Is this container distinctive? Will it sell on the shelf? Does it pack properly, ship safely? Our design department specializes in designs that stop the eye . . . start the sale. For an affirmative solution to your design problems, contact Maryland Glass Corporation, 2147-53 Wicomico St., Baltimore 30, Md.

PACK TO ATTRACT IN

MARYLAND GLASS

Blue or Flint · Jars and Bottles

under consideration. These may include a skin conditioner and an eye wash.

Hoffmann-La Roche now has on the market under the division, Roche Laboratories, Tashant Cream, a product for superficial skin complaints such as simple eczema, scaley skin, chapping, minor burns, sun and wind burns, diaper rash, etc.

Abbott Laboratories is placing in the trade press a unique color campaign for Selsun, a dandruff product.

Make-Up

Sales managers around the country have been watching with mixed feelings the automobile industry's drive based on the slogan "You auto buy now."

We hear that an ambitious shoe store decorated a window with a slogan "You shoe'd buy now."

In spite of the fact that public opinion is rapidly coming to the conclusion that this is more juvenile than effective, if this keeps up, the cosmetic industry must join in in some way.

Why not the slogan, "Make-up" your mind to buy now."

Big Advertisers

Lever Bros. Company led the drug and toiletry field in 1957 in newspaper advertising. The amount spent was $14,288,510.

Other leading drug and toiletry advertisers were Colgate-Palmolive Co., $8,663,208; Procter & Gamble Co., $7,939,655; Gillette Co., $3,212,481; Bristol-Myers Co., $3,120,537; Sterling Drug, Inc., $2,423,801; Carter Products, Inc., $2,372,555; Warner-Lambert, $2,101,024 and Plough, Inc., $1,429,079.

Air-Drop Package

A fiber container that can be dropped from an airplane without a parachute has just been announced by the National Fiber Can and Tube Association.

The case is designed for airdrops of plasma, drugs, food and other supplies during emergencies. The place of landing can be pinpointed much better than by a parachute drop.

In using this package, the contents are placed in a flexible polyethylene tube, which is then suspended in the fiber container by a twisted polyethelene sleeve.

In a recent test, 15 cases carrying bottles of blood plasma were dropped at designated points without damage to the contents.

Fair Trade Abroad

What we call fair trade is having its troubles in England as well as here. The law is a lot tougher and more clear cut in England and more easily enforced and yet, as one British publication says, "The authority of the manufacturer is clearly breaking down in a great many shops."

Here is what a British publication has to say on this subject. "Selling of branded goods at cut prices is becoming a widespread practice. What the Americans know as 'discount houses' will probably be impossible under British law. Any manufacturer is entitled to sue a retailer who sells his goods below the agreed price. But it is being done all the same, and on a large scale, by all sorts of retailers. The housewife who shops around can cut her household budget quite substantially. Many ordinary groceries can be brought up to 25 per cent cheaper than the advertised prices, and rebates of 10-20 per cent are common for a long list of everyday necessities, as well as articles of clothing and consumer durables."

Selling and Inflation

There are reports from the trade that a leading department store chain has just adopted a policy of refusing all local advertising from perfume, cosmetic and toiletry advertisers except that paid for 100 per cent by the manufacturer. These stores have also declared that they will not have any girls in their department except those paid for by manufacturers.

This is a pretty blunt way of creeping up on the manufacturers' pocketbook. Retailers, in fact, have been using more and more pressure lately to increase their share of the distribution dollar.

There is no doubt that the retailers, like everyone else, have their problems with increasing costs and more or less fixed sales prices. Nevertheless, we have been passing through a period where there has been a substantial increase in the cost of distribution for many products in America.

This increase in the cost of distribution for many products has exceeded the so-called wage push in factories.

Inflation is being blamed on a great many things in this country, particularly on the production-wage push. In packaged goods, at least, a predominately inflationary factor has been in the way excessive costs for sales and advertising and every part of marketing and distribution have been loaded on the consumer.

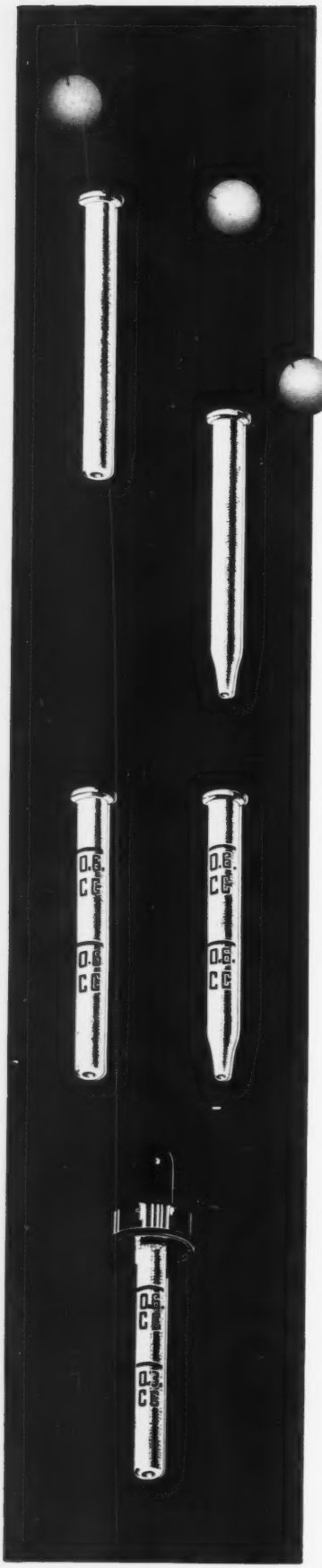
New Status Symbol

We hear that the consumer is developing a new "Status Symbol", that is "the ability to buy cheaper than anyone else." According to one sociologist, it seems that the public is reacting against extravagant advertising claims of all sorts and hidden price deals. As a result, the new status is the ability to demonstrate more clever buying.

Cheers

We heartily cheer the new, heavy, spot television campaign that will be conducted during this summer for Super Anahist Tablets. This is said to be the first time any major cold remedy has conducted a sustained advertising drive through the warm weather period.

This heavy TV campaign will continue until the start of the regular winter selling season.



Colonial

for

PRECISION ENGINEERED

Plastics

"Precision in plastics" is more than a mere sales expression at Colonial Applicator Company. It is a day-to-day reality made possible by unexcelled craftsmanship and the most rigid adherence to your specifications.

Stringent quality control insures top performing plastics. Each dropper and assembly is the best that man and machine can produce.

Let our technicians make free samples to your most exacting specifications. Contact a Colonial representative listed below or write to us directly.

Specialists in Glass or Plastic Droppers
and Assemblies for Nearly a Quarter of a Century

Represented by:

CHARLES E. SCHWAB
122 E. 42 St.
New York 17, N. Y.
OXford 7-0760

ALLEN J. GRETSCH
327 LaSalle St.
Chicago 4, Ill.
WAbash 2-1619

HARRY M. GRABER
811 S. 53rd St.
Philadelphia 43, Pa.
GRanite 6-6311

GABLER & GABLER
435 S. LaCienega Blvd.
Los Angeles 48, Cal.
BRadshaw 2-2995

RICHARDS GLASS COMPANY
102 Atlantic Ave.
Toronto 3, Canada
LEnox 2-3311

COLONIAL APPLICATOR CO.

VINELAND, NEW JERSEY

This unusual campaign is the result of a summer-long test in Chicago last year which proved highly successful. In addition, according to the company, more than one third of consumer sales occurred during the summer months, and warm weather sales have risen so sharply that now sales during the summertime are larger than winter sales were four years ago.

In addition to this advertising campaign, retailers are offered special summer cold and allergy merchandising deals designed specifically for increased summer sales.

The reason for our loud cheers is that almost universally this trade, both in drugs and in cosmetics, has accepted with resignation a strong seasonal variation in sales. In some cases this is obviously an unavoidable characteristic of the product, but in too many cases this resignation as to seasonal variations means a retreat from creative thinking, a retreat from energetic salesmenship and a retreat from a possible opportunity of at least partially correcting this off-season sales decline.

Sales or Profits

We quote here from a statement by Max Factor, Jr., the president of Max Factor & Company for the first quarter report of 1958.

Mr. Factor stated that, "in the face of adverse economic conditions we have been able to maintain our sales volume only by increasing our advertising expenditures. This has resulted in a lesser net profit than obtained for the first quarter of last year."

There seems to be quite a philosophy among businessmen in certain quarters that sales volume is much more important than profits.

Breck Survey

The John H. Breck, Inc. Eleventh Anual Survey of Beauty Shop Attendance finds that over 80 per cent of all women have one or more hair problems and that these problems in order of importance are manageability, hair dryness and dandruff.

During 1957 there was a slight increase in the use of hair coloring by the women interviewed.

Further information on this complete survey can be obtained from the John H. Breck Co., Springfield, Mass.

Retail Private Label

In a discussion of private label in grocery stores, an executive of the Safeway organization recently stated, "Private labels definitely have a place—but a reasonably limited place."

This executive then went on to say that the private label goods should have a quality equal to that of the national brands competing, should have a lower price than comparative national brands and should give more profit to the chain.

New Shaving Habits

Should an advertising agency man be allowed to change a brand image in midstream?

Whether he should or not, it happens continually. For instance, here's what one of them had to say about a product in this trade as quoted recently in the book "Madison Avenue, U.S.A."

"Why does a man use cologne? To be sexy, of course. Sportsman Toiletries came to us, they were using fishing rods in their ads to show they appeal to the outdoor type. What good is that? The girl we gave them has been one of the highest rating ads since it appeared."

We ask, in a very timid way, how does he know that sex is so damn hot in men's toiletries? In a hasty review of some 50 or more men's toiletries over the last 20 years we fail to recall a single one that made progress with this claim.

Perhaps this advertising man is going to change our shaving habits and have us shave just before going to bed. Maybe then his appeal will work.

As far as we are concerned, we are usually very sour about sex, when we shave, just before breakfast.

One by One

Of all the remarks we have heard about the Edsel car, here are the ones we like best. "It is now obvious that the people genuinely hungered for a new approach to automobiles. So they followed news of the Edsel's development with great interest. They flocked to showrooms to look. But all they got was more of the same—and at a higher price. They've vented their greatest wrath: indifference. The need of the individual was misjudged. *Autos are made by the millions—but bought one at a time.*"

That last sentence is a phrase that we think could be printed on a sign and hung up in the offices of every mass merchandiser.

Some of these people who are turning out millions and millions of a standardized uniform product selling in a 100,000 or more retail stores are very apt to forget that when Mrs. Public steps up to the retail counter to buy, she is just buying one particular packaged product that we may presume has a very definite individuality to her.

More Out of Advertising

How Valuable is Ad Enthusiasm? This is the title of a recent article in Sales Management. This article, based upon the magazine's Sales Readership Panel, came up with some opinions that are very interesting to us as trade paper publishers. As a matter of fact, it is the very thing we have been trying to say in our feeble way for many years.

Here is the first conclusion: The main value of advertising is in the merchandising of it!"

And here is the next one: "If salesmen and their customers are really enthusiastic and do a good job of merchandising, the real cost of advertising can be cut in half."

War, huh!

Maybe 6_a methyl, 17_ahydroxyprogestrone 17, acetate will do more to eliminate war threats than jets, atoms and nuclear superiority.

What is your choice in stock bottles? Tall, short, square, round . . . you'll find them all in the extensive Carr-Lowrey line. Here are our 338, 439 and C-39 styles. Decorated with your own design they make a package of which you can be justifiably proud.

GLASS STIMULATES SALES

CARR-LOWREY GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

News in Packaging . . .

Score "Meaningless" Research

Evaluating the marketing effectiveness of new package designs by mechanical methods, in particular by eye movement testing, has been called meaningless and obsolete by psychologists at the Center for Research in Marketing. Such is the conclusion of a report distributed by the center at the recent American Management Association packaging show.

William Capitman, president of the center, has stated that the report "should prove important to those manufacturers who have many thousands of dollars riding on a package design and can ill afford to place their reliance upon a research procedure of such questionable meaning."

First Corticosteroid Aerosol

Schering Corporation's Meti-Derm is the first corticosteroid to be packaged in an aerosol, according to an announcement by the company. The can—four inches high and two inches wide—holds five ounces of medication and contains three ounces of prednisolone. Each three-second spray provides about 0.5 mg.

UCON Technical Rep

Charles Franklin Gray has been appointed UCON propellant technical representative by Union Carbide Chemicals Company, Division of Union Carbide Corporation, to work out of the company's Chicago offices.

Harvey Tull in New Post

Harvey C. Tull, formerly manager of aerosol products, Crown Cork & Seal Company, has been appointed the company's consolidated district sales manager at Philadelphia.

G. Barr and Co. Expands

Research and development laboratory facilities at G. Barr and Co. have been increased, according to an announcement by George Barr, president. He said that laboratory space has been increased 25 per cent and the technical staff increased from fourteen to a total of nineteen chemists.

Mr. Barr stated that the accelerated research and development would be related principally to nitrogen-propelled products, the segment of aerosol technology to which "we attribute the greatest potential for elaboration and growth." He reported a present average weekly production rate of 1,000,000 pressure package units, a ten-fold increase over 1950 output.

"This year we are filling twenty-five categories of products, as compared with fifteen kinds four years ago and five kinds in 1950," Mr. Barr said. Principal product classifications include hair sprays, dentifrices, colognes, room deodorants, anti-perspirants, and topical antiseptics. He reported development work on aerosols for face creams, hand lotions, hair preparations, and other toiletries.

Trends in Package Design

"Significant Trends and Future Developments in Package Design" was discussed by a panel of package designers at a recent dinner meeting sponsored by the Package Designers Council.

A trend away from "hard sell" packaging towards packages "with the Tiffany look" was noted by Royal Dadmun of Royal Dadmun & Associates, Baltimore. "As our economy products a higher living standard and more leisure, the consumer becomes more sophisticated," he said. "The new package will be pleasing and polite enough to be invited to the table." An example of this type of packaging is the apothecary jar for Upjohn vitamin pills.

Dean H. Reynolds, chief designer for Eastman Kodak Co., Rochester, referred to the "ages" of package design—the decorative age, the package engineering and then the merchandising age. "We are now ready," he said, "for the fulfillment of package design by means of graphics. Graphic design can promote the same product for different uses and various phases of everyday life. I think the graphics of the package should and soon will delineate different moods for the same product."

Helene Curtis is packaging its Tempo hair spray in a tall modernistic container with a textured white surface and gold and black lettering. "Tempo" is written across the front in a distinctive deep grey script.

Egmont Arens of Egmont Arens, Inc., New York, said that in today's highly competitive marketing situation the use of new packaging techniques and materials is not always the advantage it seems to be. "Any effective packaging strategy is soon adopted en masse by every manufacturer in the field. When that happens the initial advantage is soon dissipated and higher packaging costs may be the only reward." He stressed that "the prime essential which a company must set in its packaging program is the establishment of strong and distinctive individuality" and it is the responsibility of the professional package designer to help him do this.

"Flexidose" droppers, which measure an 0.3 or 0.6 cc. dose, are being supplied with Engran Baby Drops (Squibb Aqueous Multiple Vitamin Drops).

A PACKAGING TEAM NEEDS

One of the most important factors in the success of a product is its package. That's why many companies are making packaging decisions *team* decisions. But to make your packaging team complete, it needs an outside viewpoint. It needs an Anchor Man...the man from Anchor Hocking!

He is a glass packaging specialist, backed by capable package engineering and research technicians, modern laboratory and manufacturing facilities. He can strengthen your packaging team in evaluating and selecting glass containers and colors that will do the best job for you, your retailers and consumers. He can also help your team in the selection of a closure that will

AN ANCHOR MAN!

most completely and economically satisfy your diverse and specialized requirements.

Your Anchor Man is a good man to know ... a good man to have on your packaging team. Contact him! Anchor Hocking Glass Corporation, Lancaster, Ohio. Branch offices in all principal cities.

ANCHOR HOCKING
Glass Containers and Closures

Patent thoughts and trends

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

This month we shall concern ourselves entirely with matters in the drug field. We first shall take a look at a recent case in which the Patent Office Board of Appeals disagreed with the Examiner and held it was not necessary to prove that the claimed drug composition was a cure for ulcers in order to satisfy the Patent Office requirement of utility. We shall then take a look at some of the recent patents obtained by the increasingly-active Warner-Lambert Company and finally we shall take a look-see at a recent patent dealing with an x-ray contrast medium.

Utility Not Same As Cure

Readers of these columns and all those who have any connection with patents in the drug field are keenly aware of what is perhaps the number one obstacle in the drug field in securing patents. Reference is made to the requirement of satisfying the so-called utility requirement. This problem has many facets; but we shall confine ourselves at this time solely to that of complying with a properly made requirement by the Examiner of a showing of clinical utility.

It appears that an affidavit by a physician was filed, tabulating the effects of the administration of partially hydrolyzed brominated protein on 60 patients on which at least some of the symptoms of duodenal ulcers were evident. A substantial reduction of the symptoms in most cases was noted. The Examiner ruled that there was no presentation of any roentgenogram indicating complete cure but rather that temporary relief was obtained and that the results were based upon statements of the patients themselves and were therefore of subjective nature.

The inventor argued that his specification does no claim a "cure" for ulcers but is rather directed to a therapeutic agent useful in the treatment of ulcers.

*Richards and Cifelli, Newark, New Jersey

The Board of Appeals agreed with the applicant stating as follows:

> "That alleviation of the symptoms of duodenal ulcer is beneficial and useful in the medical field can hardly be considered a matter to be questioned. Furthermore, we find some difficulty in determining how tests for the various symptoms of ulcers as listed in the second page of the report such as 'burning in stomach areas, flatulence,' or pains or distress in various areas can be determined except by questioning the patient."

It goes without saying that the decision in question, reported at 117 USPQ 229, in the case of *Ex parte Ferguson*, will be welcomed by the drug industry. However, it is well to note that *clinical* tests were required and that in this area it is not wise to attempt to extrapolate any decisions too broadly as the facts of each case have to be kept in mind at all times.

Warner-Lambert Active Patentwise

One of the observations often made in these columns is the striking connection between patent activity and leadership in the drug field. This relationship seems to be working out with respect to a "newcomer" to the drug field: Warner-Lambert. While the company was formed by a merger of old line firms, the company itself recently announced that it had passed through a transitional period from that of a primarily cosmetic house to that of a pharmaceutical concern primarily.

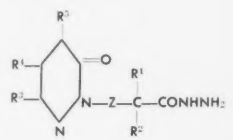
If any one had taken the trouble to check the issued U. S. patents in recent years he would have found only mild activity by Warner-Lambert and its predecessor organizations. On the other hand, during the first few months of the current year Warner-Lambert has already obtained as many U. S. patents as it and its predecessors obtained in the three previous years. Even though the current rate of patent productivity may not be maintained, present indications, on the basis of just the one criterion already noted, point to Warner-Lambert becoming a leader in the drug field.

For this reason it might be of interest to take a look at three recent patents obtained over a one week period by Warner-Lambert.

U. S. 2,832,791 deals with thiosemicarbazones of thienylaldehydes and thienylketones. More particularly the patent deals with 2, 5-dimethyl - 3 - acetylthiophenethiosemicarbazone.

The patented compound is said to be a bacteriostat being especially active against the Streptococcus hemolyticus as well as against mycobacterium tuberculosis.

U. S. 2,832,780 deals with new hydrazides of pyridazonyl-substituted alkanoic acids. The new compounds may be represented by the following generic formula:



wherein

R^1 denotes hydrogen or lower alkyl

R^2 denotes hydrogen, lower alkyl or phenyl

R^3 denotes hydrogen, halogen, lower alkyl, phenyl or halophenyl

R^4 denotes hydrogen, halogen or lower alkyl

R^5 denotes hydrogen, halogen or lower alkyl

and Z denotes a direct linkage, an unsubstituted alkylene chain containing not more than 20 carbon atoms, or a lower alkyl-substituted alkylene chain containing not more than 20 carbon atoms.

They are said to be especially valuable as wound healing agents.

U. S. 2,833,774 deals with quaternized thiofuramide derivatives.

The new compounds may be rep-

Glamour—

sells cosmetics

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Pleasing a lady is more than a pleasure. It's profitable—if you do it with glamourous Conolene plastic cosmetic bottles.

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Many manufacturers are already using glamourous Conolene plastic bottles to sell cosmetics. Why don't you? Call Continental today for full information.

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Another CROWN first– Push-button tooth paste

Whole new sales potentials open up . . . static sales curves take an upward turn . . . when aerosol packaging gets in the act. Now, to its growing list of Spra-Tainer users, Crown has added the pressure packaging of toothpaste.

Crown, who pioneered the aerosol can with Spra-Tainers, has continued to expand production facilities in the aerosol field . . . offers the most complete line of aerosol cans available in both the seamless and fabricated styles.

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for closures
for containers
for machinery

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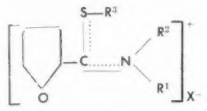
resented by the structural formula



wherein R^1, R^2 and R^3, which are not necessarily the same, are selected from the group consisting of alkyl, alkenyl, aralkyl and aryl, R^1 and R^2 being such that they may be joined together to form staurated N-heteromonocyclic radicals having 5—6 ring atoms, and X is a radical such that X^- is a quaternizing anion. Thus R^1, R^2 and R^3 may represent methyl, ethyl, propyl, n-octyl, allyl, benzyl, phenylethyl, phenyl, p-chlorophenyl and the like, R^1 and R^2 together with the nitrogen atom connecting them may also represent 1-piperidyl, 1-pyrrolidyl 1-morpholinyl and the like, X^- may represent chloride bromide, iodide, monomethyl sulfate and the like.

The compounds are said to possess virucidal activity. Methyl N-methyl-2-thiomurimidate methiodide is said to give protection against the lethal effects of Influenza A (PRH) in mice at an adult level of approximately 11 milligrams per kilogram of body weight. The new compound may be used therapeutically, be parenteral administration of an aqueous solution or by oral or rectal administration of the substance either in pure form or in admixture with various fillers, vehicles, carriers, and other types of commonly used pharmaceutical excipients.

X-Ray Contrast Medium Containing PVP

Polyvinylpyrrolidone (PVP) has found use in the pharmaceutical industry, for example, as a suggested blood plasma extender. A recent patent (U. S. 2,832,722) suggests its use in connection with x-ray contrast media.

This patent, assigned to Ortho Pharmaceutical Corporation, covers a radiopaque formulation for introduction into hollow body organs and body tissues containing sinuses comprising: an aqueous solution of polyvinylpyrrolidone and a salt of an iodinated organic compound, the solution having a viscosity after sterilization of 50-300 centipoises at 37° C. and an iodine content of 150-325 milligrams of iodine per gram; the polyvinylpyrrolidone having a viscosity coefficient of about 20-33, a molecular weight range of 15,000-80,000 and an average molecular weight of about 20,000-40,000; and the salt of an iodinated organic compound being selected from the class consisting of salts of iodinated aliphatic, aromatic and heterocyclic compounds.

The patent goes into an interesting discussion of the medical subject called salpingography, the radiographic visualization of the Fallopian tubes. That discussion is reproduced below:

Some of the earliest radiographic examinations of the Fallopian tubes were made by means of injection of sodium bromide solution; however, it was found that this means produced peritoneal irritation and also remaining inspissated in the tubal lumen and produced an obstruction in previously patent tubes. In place of a solution of sodium bromide alone, a solution of sodium bromide, thorium nitrate and sodium iodide was subsequently used and although this eliminated inspissation to some extent, irritation and spasm were disagreeable symptoms arising from the use of the later solution.

In salpingography, the radiopaque formulation is injected by means of a cannula into the cervix from which it passes through the uterus and into the Fallopian tubes. Since the tubes open into the abdominal cavity, there is a possibility that some of the formulation may be introduced into the abdomen and in this event, it is desirable that the formulation be readily absorbed, nonirritating, and nontoxic.

Radiopaque materials, such as iodinated oils, iodinated fatty oils and iodinated poppy-seed oil containing 40 per cent of iodine in particular, as well as aqueous solutions of iodinated aliphatic aromatic and heterocyclic compounds, and polyvinyl alcohol or acacia, were used in salpingography and generally in the visualization of hollow body organs and body tissues containing sinuses. Iodinated oils give very high X-ray contrast because each molecule contains at least one atom of iodine; however, they are reported to be highly irritating to sensitive membranes and surface tissues of body organs and to be only slowly absorbed from body cavities which often results in undesirable tissue reactions because of their protracted contact with the tissues of body cavities.

Iodinated oils act as a foreign body, particularly in the narrowed lumen and have a tendency to remain in the body indefinitely which leads to occlusion. Histological examination of tubes in which an iodinated oil has been present has shown nodular tissue filled with foreign body granulation cells. In cases where iodinated oil has been present in the free peritoneal cavity following salpingography the rate of absorption has been slow and it was found that iodinated oil had produced a foreign body reaction in the pelvis with the formation of giant cells and cysts.

Aqueous solutions of radiopaque substances such as iodinated derivatives of aliphatic, aromatic and hetterocyclic organic compounds have received some acceptance for use in the visualization of hollow body organs but they have the inherent disadvantage of being irritating to tissues, slowly absorbed or of providing a roentenogram of low contrast, or a combination of these disadvantages.

As a result of some untoward sequelae encountered after injection of iodinated oils and the use of other radiopaque media in salpingography, the desiderata of an ideal radiopaque substance were expressed to be: (1) The ideal radiographic medium must be totally innocuous to the organism as well as to the reproductive organs. (2) It must possess that degree of resorbability which shall enable it to disappear from the system rapidly and completely after it has accomplished its diagnostic purpose, leaving no residue. (3) It must have the proper viscosity that will adequately permit of radiographic demonstration of adherent and partially strictured tubes. Page 363, I. C. Rubin Uterotubal Insufflation, published in 1947 by the C. V. Mosby Company, St. Louis, Missouri.

It was later found that a viscous radiopaque formulation, which has the property of adhesion to tissues, provides the most satisfactory roentenogram, particularly in salpingography. A solution of an organic radiopaque material in polyvinyl alcohol has been used as a radiopaque formulation in the visualization of hollow body organs and particularly in salpingography; however, the solubility of most organic radiopaque

(*Continued on page 119*)

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NEWS...

Hardt Resigns from Roche To Head Armour Pharmaceutical

Robert A. Hardt, executive vice-president for marketing of Hoffmann-La Roche Inc., has resigned his position to become president of the Armour Pharmaceutical Company and vice-president of Armour and Company, it has been announced by L. D. Barney, Roche president.

At the same time, Mr. Barney announced that Dr. V. D. Mattia, Jr., has been named general manager of Roche Laboratories, Division of Hoffmann-La Roche Inc. Dr. Mattia has been director of medical research for Roche.

Mr. Hardt will join the Armour Pharmaceutical Company (formerly known as Armour Laboratories, the ethical pharmaceutical division of Armour and Company) on Sept. 1. He has been with Roche for the past twelve years, initially serving as vice-president for pharmaceutical sales and advertising and most recently as executive vice-president for marketing.

Dr. Mattia will assume his new duties immediately with Mr. Hardt serving in a consulting capacity until September. Dr. Mattia joined Roche in 1957 as director of medical information. In January, 1958, he was named director of medical research.

JAMES N. COOKE

Gen. Mgr. of Roerig

George B. Stone, assistant to the president of Chas. Pfizer & Co., Inc., has been named general manager of the firm's J. B. Roerig and Company division.

Mr. Stone returns to the Pfizer or-

GEORGE B. STONE

ganization after a year of study in the executive development program of the School of Industrial Management at Massachusetts Institute of Technology. He was one of 36 business and government executives awarded fellowships last year by the Alfred P. Sloan Foundation.

Mr. Stone joined Pfizer in 1940 as a chemist in the analytical Department. Serving as a major in the Air Force during World War II, he returned to Pfizer in 1946 as a member of the technical service Department. In 1950 he was appointed coordinator of new product development and in 1954 he was named assistant to John E. McKeen, president and chairman of the board.

During his career at Pfizer, Mr. Stone has supervised the company's market research, public relations, new product development, operations research and technical service programs.

National Brands Pres.

James N. Cooke, a vice-president of Sterling Drug Inc. has been named president of the National Brands Division, according to an announcement by James Hill Jr. Stanley I. Clark, a Sterling, vice-president, has been named executive vice-president of National Brands.

A. J. Burns, a vice-president of Sterling, has been appointed director of production, distribution and new product development of National Brands. John Edward Grimm III, divisional vice-president has been named director of sales of the National Brands Division.

Health News Inst. Officers

Kenneth F. Valentine, president of Pitman-Moore Company, has been elected chairman of the board of the Health News Institute. A. H. Fiske, vice president of Eli Lilly & Company, Indianapolis, has been named president, and Chet Shaw, operational head of the Institute, has been re-elected executive vice-president.

Other officers: vice presidents: J. Mark Hiebert, M.D., president of Sterling Drug Inc.; H. W. Blades, president of Wyeth Laboratories; and James E. Allen, president of The Henry B. Gilpin Company; treasurer: S. Barksdale Penick, Jr., president of S. B. Penick & Company; secretary: John K. Worley of Youngjohn, Worley & Brown.

George F. Smith, president of Johnson & Johnson, has retired as chairman of the board of HNI and taken office as president of the Pharmaceutical Manufacturers' Association. Mr. Smith remains on the board of trustees of the HNI.

Martin Revson Resigns

Charles Revson, president of Revlon, Inc. has announced the resignation of Martin Revson as executive vice-president and director of the Company. The resignation was due to personal differences between Charles Revson and Martin Revson, according to an announcement from the firm.

The following appointments have been announced by Charles Revson:

To the newly created post of assistant to the president, E. William Mandel, formerly advertising manager of Revlon; to the position of advertising manager, William Siegel, formerly director of advertising of Coty, Inc.; to the position of product advertising manager, David North, formerly advertising manager of Martinson's Coffee.

STANLEY I. CLARK

Vitamins in Pharmaceuticals

A REPORT

Use of Biotin in Multivitamin Formulae

Biotin, now firmly established as an important member of the vitamin B complex, belongs in multivitamin formulae and dietary supplements for the reasons given below.

D-biotin is required for the growth of many organisms: animals, plants, bacteria. It appears to be related to the process of cell development. Symptoms of deficiency have been shown to occur in human beings who live on diets high in raw egg white.

Deficiency symptoms appear as severe dermatitis lesions, similar to seborrheic dermatitis and a desquamating disease of infants called Leiner's disease. These symptoms, when due to a deficiency of biotin, disappear after its administration. In animals, dermatitis, loss of hair, cessation of growth of the young and sudden death of the adults may occur.

Nearly 200 papers directly related to biotin research are in the literature. The work of investigation continues.

The evidence now available points to the need for biotin in multivitamin and dietary supplements which, by their very nature, are prescribed for therapeutic and prophylactic effect.

The Place of Biotin in Antibiotic Therapy

Rat feeding experiments using some of the sulfonamides show that the animals develop biotin deficiency. The same result has been found and reported from the use of antibiotics. It has been assumed that the same development might occur in man when this therapy is used. Under the circumstances, biotin should be included in stress formulae and in multivitamin supplements which are prescribed so often during and after the administration of these modern drugs.

Usage in Veterinary Medicine

In dogs and dairy calves it has been found that a deficiency of biotin will cause a paralysis of the hind quarters. This condition was cured by the administration of the vitamin. In chicks and turkey poults a biotin deficiency, represented by a dermatitis of the feet, may be overcome by the use of biotin in the feeding formula. A substantial increase in hatchability was found when hens were fed a ration known to be rich in d-biotin.

This evidence indicates that biotin has a definite place in veterinary medicine and animal nutrition.

Technical Data

Empirical Formula ..... $C_{10}H_{16}O_3N_2S$

Molecular Weight 244.3

Slightly soluble in water and 95% alcohol. Insoluble in ether, acetone and ethyl acetate. Soluble in d-panthenol.

Thermostable in dry crystalline form.

Not sensitive to light.

Not affected by reducing agents that may be present in polyvitamin and other pharmaceutical preparations.

The brilliant Roche synthesis of 1946 makes biotin readily available in pure form at a relatively modest cost.

Roche, a world leader in vitamin research and production, has a wealth of information about biotin. Skilled technical people are ready to help you incorporate biotin Roche in your preparations.

New Edition of Brochure

Send now for your personal copy of the Roche technical brochure about d-biotin. Second edition is now available, complete with survey of recent literature and up-to-date bibliography. Ask your Roche salesman or write the Vitamin Division, without obligation.

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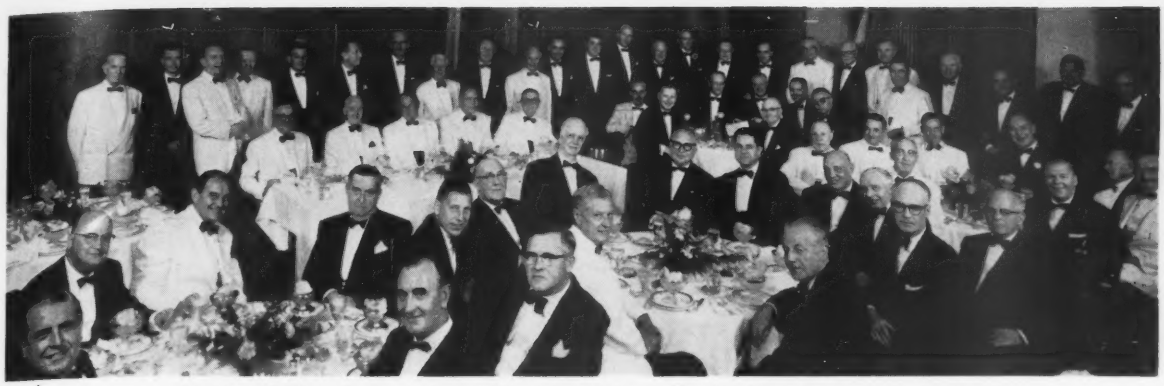

Friends of William D. Barry, vice-president of Mallinckrodt Chemical Works, gather at the Union League Club in New York City to honor him on his completion of 50 years service with Mallinckrodt.

Elliott-Smith in New Post

Paul Elliott-Smith has been appointed product advertising manager, it has been announced by Irvin W. Hoff, vice-president for advertising of the Family Products Division of Warner-Lambert Pharmaceutical Company.

Mr. Elliott-Smith will be responsible for the advertising of several of Warner-Lambert's proprietary pharmaceuticals. His duties will include representing the company in its dealings with advertising agencies for these products, as well as for new product lines still under development. Prior to joining Warner-Lambert, he was a product manager for the Colgate-Palmolive Company.

G. F. Harvey Med. Director

Martin C. Sampson, M.D., has been appointed medical director of the G. F. Harvey Company, Inc. He will direct the pharmacological and clinical research of new drugs developed in the laboratories of the company. Prior to joining G. F. Harvey, he was with the Research and Development Division of Smith, Kline and French Laboratories.

DR. MARTIN C. SAMPSON

Fund to Aid Retarded Children Named for the Late May Barry

William D. Barry, vice-president of Mallinckrodt Chemical Works, was guest of honor at a dinner tendered by some 75 of his friends to mark completion of his 50 years of service with Mallinckrodt. The dinner was held June 6 at the Union League Club, New York.

Those attending, as well as many who could not be present, contributed a substantial sum of money to establish the New York Chapter of the Association for the Help of Retarded Children, Inc.—May Barry Fund, located at 200 Fourth Avenue, New York. This fund, which will be under the direction of Mr. Barry, is in memory of Mr. Barry's late wife, who spent her life teaching and aiding mentally retarded children through the New York Public School system.

Elect McClure MCA Chairman

Harry B. McClure, vice-president of Union Carbide Corp., was elected chairman of the board of directors of the Manufacturing Chemists' Association at its 86th Annual Meeting. He succeeds Ernest Hart, president of Food Machinery and Chemical Corp.

John T. Connor, president of Merck & Co., Inc., succeeds Mr. McClure as chairman of the executive committee. Gen. John E. Hull, USA (Ret.)., was re-elected full-time president and a director.

Re-elected vice-president was D. S. Frederick, vice-president of Rohm & Haas Co. Fred C. Foy, president, Koppers Co., Inc., was elected an MCA vice president. M. F. Crass Jr., full-time secretary-treasurer, was re-elected.

Dr. Pilgrim to Join Merrell

Dr. Fredrick J. Pilgrim will join The Wm. S. Merrell Company Aug. 1 as associate director of research in charge of chemical sciences, F. N. Getman, president, has announced.

Dr. Pilgrim will head-up all organic and pharmaceutical chemistry research departments. He has sixteen years experience in research and the pharmaceutical industry. Prior to joining Merrell, Dr. Pilgrim was manager of the Groton, Conn., Research Laboratories of Chas. Pfizer and Co.

Felton Appoints Dubenchiek

Alexander S. Dubenchiek, who is celebrating his twentieth year in the essential oil industry, has been appointed to head Felton Chemical Company's Essential Oil and True Fruit Flavor Research Laboratories. Mr. Dubenchiek is a veteran member of the Scientific Committee of the Essential Oil Association of the U. S., where he has been chairman of several committees engaged in establishing standards for essential oils. He is also a member of the Institute of Food Technologists and the American Chemical Society.

ALEXANDER S. DUBENCHIEK

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Pfizer Biologicals Center

Production of polyvalent influenza vaccine is now under way at the new biologicals center of Chas. Pfizer & Co., Inc., near Terre Haute, John E. McKeen, president of the firm has announced. The vaccine, marketed through the Pfizer Laboratories division, incorporates the Asian influenza virus with three other strains.

In addition to the polyvalent vaccine, the center is equipped to produce a variety of other vaccines by both tissue culture and chick embryo culture techniques, according to Mr. McKeen. "Production of a number of biologicals for both human and animal use has been under study for several months," he said.

Pfizer is producing two types of polyvalent influenza vaccine. The first, available in 5 cc. multiple-dose vials for use by the civilian medical profession, incorporates the four strains of influenza virus specified by the National Institutes of Health. A six-strain vaccine is also being produced to meet U. S. Army requirements for the protection of troops here and abroad against the types of influenza they are most likely to encounter.

The biologicals center consists of a series of laboratory and production buildings located about two miles from the company's Agricultural Research and Development Center.

Production units are built around the latest manufacturing equipment, Mr. McKeen said, citing as an example the first industrial installation of gas autoclave equipment for operations in which steam sterilization would caused rapid deterioration of heat-sensitive materials.

Pfizer was granted a license to produce Asian influenza vaccine last January, marking the firm's entry into the field of biologicals.

DR. S. J. LONDON

Purdue Frederick Medical Dir.

S. J. London, M.D., has been appointed medical director of The Purdue Frederick Company, it has been announced by Benjamin Schneider, president of the firm.

Prior to joining Purdue Frederick, he was an Instructor in Medicine, Wayne State University College of Medicine, Detroit.

Chesebrough-Pond's VPs

William C. Watson has been elected a vice president of Chesebrough-Pond's Inc. Treasurer of the firm since July 1956, and a member of the board of directors since May 1957, he will continue to hold these positions.

The International Division of Chesebrough-Pond's Inc., has appointed Clifford M. Baker Jr., Henry Herbert, and Ralph E. Ward as vice-presidents.

Shulton Res. Project Leader

Robert L. Goldemberg has joined Shulton, Inc., as a project leader in the firm's toiletries research laboratories, it has been announced by Dr. Charles Kline, scientific director. Mr. Goldemberg was formerly a senior chemist with Coty Products Corporation.

Upjohn's new Minneapolis branch

THURSTON MERRELL JR.

Promoted by Merrell

Thurston Merrell Jr., formerly Canadian operations manager of The Wm. S. Merrell Company, has been promoted to the newly created position of marketing administrative assistant, according to an announcement by Frank N. Getman, president. Mr. Merrell, representing the fourth generation of the founder of the firm, is the son of Thurston Merrell, former president and board chairman.

Fred J. Ausdenmoore, formerly assistant advertising manager, has been promoted to Canadian operations manager. He has been associated with the Merrell company four years.

SCC Special Awards Chmn.

H. J. Amsterdam, director of cosmetic research and development for van Ameringen-Haebler, Inc., was recently appointed to his third successive term as chairman of the special awards committee of the Society of Cosmetic Chemists.

Dr. Carnes in New Post

Dr. Harry E. Carnes, veteran Parke, Davis & Company physician and a member of the firm's clinical investigation staff for the past 10 years, has been appointed director of medical correspondence and editor of Therapeutic Notes, which has a circulation of about 500,000 and is published monthly in five languages and seven editions for physicians throughout the world.

Graydon L. Walker, vice-president and director of United States sales and promotion, said Dr. Carnes will handle medical review and approval within the pharmaceutical firm's sales division, and serve as medical liaison with other divisions when medical problems are involved.

John L. Cassullo, center, president of Fritzsche Brothers, Inc., and his wife are welcomed at Buenos Aires airport by officers of Fritzsche Brothers Argentina, S.A., affiliate of the New York firm. Left to right: Enrique Lozano, director of the South American company, Alfonso Lopez Ayala, its president, and Dr. J. C. Tuja, another director.

Chairman of Wallerstein Commercial Devel. Group

Edward Rollhaus has been appointed chairman of the Wallerstein commercial development group it has been announced by Arthur C. Emelin, president of the Wallerstein Company. Serving with Mr. Rollhaus on the committee are Dr. Kenneth Howard and James Boyd.

The purpose of the group is to find additional markets for present Wallerstein products and new methods of utilizing the extensive library of enzymes which the Wallerstein Company has created during the past 40 years. The group will likewise seek to encourage a flow of ideas and inquiries from outside sources which will help the Wallerstein Company to develop new products and services through the efforts of its extensive scientific organization.

Shulton Researchers

Robert J. James has joined the Shulton Toiletries Division as a project leader, and Eleanor M. Weisbrod has been appointed a research chemist for the division, according to an announcement by S. J. Strianse, research director.

Mr. James formerly was associated with Chesebrough-Pond's Inc. as a cosmetic research chemist; Miss Weisbrod formerly was in charge of the quality control laboratory of the Andrew Jergens Company.

Queen Juliana Honors A. Schwarz

Queen Juliana of the Netherlands has promoted A. Schwarz, managing director of Polak & Schwarz, from Knight of the Order of Oranje-Nassau to Officer of the same Order.

Bourjois Sales Vice-Pres.

L. C. Hallett has been appointed vice-president—sales for Bourjois, Inc., according to an announcement by Frank X. Patrey, president and general manager of the firm. Formerly a Bourjois sales representative, Mr. Hallett recently covered the Pennsylvania, New Jersey and Delaware territories. Prior to joining Bourjois, he was with Harriet Hubbard Ayer and Lentheric.

Carbide Chem. Reassigns 3

Transfer of three technical representatives was recently announced by Union Carbide Chemicals Company: Paul A. Hiznay to the Philadelphia District; Francis R. Kean to the Newark District; and Charles D. Schmidt to the Detroit District.

Vice-Pres. of Lanolin Plus

Gus S. Kass has been elected vice-president of Lanolin Plus, Inc. Associated with the company for the past four and one half years as research director, he is now technical director in charge of all product research and development, and manufacturing operations.

GUS S. KASS

French Perfumers Get Honorary Membership in American Society

The American Society of Perfumers at its recent dinner meeting voted to give honorary membership to the Societe Technique des Parfumeurs de France, according to an announcement by H. C. Saunders, secretary of the ASP. About two months earlier, the French group had given honorary membership to the American unit.

Jack Abrams on Factor Board

Jack Abrams, treasurer and comptroller of Max Factor & Co., was elected to the company's board of directors at the firm's annual stockholders meeting. All eight other directors were re-elected.

Lilly Control Directors

W. Brooks Fortune, Ph.D., has been named Eli Lilly and Company's executive director of control, and Stanley F. Kern, Ph.D., has been appointed director of the pharmaceutical control division.

Tussy Cosmetics Sales Mgr.

S. LeBaron Smith has been promoted to sales manager of Tussy Cosmetics, it has been announced by Paul Carey, vice-president of Lehn & Fink Products Corporation.

Mr. Smith, appointed merchandise manager of Tussy last year, joined the company in 1951 as assistant sales manager. He replaces Gerry Cannon, who has left Tussy to join the Northam Warren Company.

In his new position, Mr. Smith will supervise and coordinate the entire sales and marketing operations for the national distribution of Tussy's complete line of facial preparations, fragrances, deodorants, and other specialty products.

Mr. Smith was formerly with Prince Matchabelli, Inc.

S. LeBARON SMITH

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high purity
quality
uniformity

emulsol
cosmetic grade
surface active agents

- Emcol 4100 Series.....flash foamers
- Emcol 5100 Series..alkanolamine condensates, both viscosity builders and foam enhancers
- Emcol E-607.....deodorants, detergent-germicides
- Emcol E-607S.....emulsifiers and conditioners
- Emcol MAS.....opacifiers
- Emcol 61.....hair conditioners

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- hair rinses
- anti-perspirants
- deodorants

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Propylene Glycol Monostearates:—Emcol PS-50

Diethylene Glycol Laurate:—Emcol RDC-D

Diethylene Glycol Stearate:—Emcol CAD

Diethylene Glycol Oleate:—Emcol DOS

Polyethylene Glycol Esters-Laurate, Oleate, Stearate:—Emcol H-38A, Emcol H-31A, Emcol H-35A

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Formulators in search of a forest-fresh woody aroma will be interested in SYLVENOL® and SYLVIOLA® by Penick.

SYLVENOL

Sylvenol is an aromatic with an intense fragrance reminiscent of sandalwood, cedar, patchouli and vetivert. Ketonic in nature, it is an excellent modifier. Because of its power, it can be used in low concentrations to enrich and deepen fine perfumes, toilet waters and colognes. Sylvenol displays amazing stability . . . is not affected by weak alkalis or acids.

SYLVIOLA

Sylviola is an economical woody aromatic with many of the characteristics of Sylvenol. It possesses a strong cedar-like character with a suggestion of an orris-ionone undertone. Sylviola is a sesquiterpene ketone . . . pale amber in color and rather viscous.

Versatile Sylviola can be used in lavender and fougere types, amber and chypre types, plus a group of heavier modern fragrances.

Would you like a sample?

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E. ROTH JANES

Chemway Vice-President

E. Roth Janes has been elected vice-president for manufacturing of Chemway Corporation.

Mr. Janes was formerly vice-president of Warner-Chilcott Laboratories. He will act as manufacturing advisor to the Lady Esther division in Chicago, as well as other Chemway units here and abroad.

Shulton Appoints David Ward

David Ward has been appointed an assistant sales manager for the Toiletries Division of Shulton, Inc., it has been announced by Richard N. Parks, vice-president for sales. Mr. Ward, who will assist Mr. Parks in special projects and will make his headquarters in the company's Chicago office, joined Shulton in February 1954 as a sales representative.

With Lehn & Fink 65 years

Richard Siller of London, Eng., who recently arrived for a visit to the United States, joined the Lehn & Fink Products Corporation in 1893 and is still director of their English subsidiaries, after sixty-five years of continuous active association with the company.

C-P Corporate Research Dir.

Dr. Joseph H. Brant has been appointed director of corporate research of the Colgate-Palmolive Company, Dr. John R. Brown Jr., vice-president for research and development, has announced. Dr. Brant will be in charge of all corporate research department activities at Jersey City, Rutgers University and the University of Rome.

He was director of research of the Toni Company from 1950 to 1957, and more recently was coordinator of research at the Harris Research Laboratories.

First Society of Pharmacists In Industry Meeting Is Held

To promote a closer relationship among pharmacists in industry through the medium of presented papers, personal association and interchange of ideas are among the objectives adopted at the first business meeting of the Society of Pharmacists in Industry. Held at the Columbia College of Pharmacy in New York City, the meeting was attended by pharmacists who are now engaged in industry in the Greater New York area.

The organization has limited active membership to pharmacists now employed by industry and will provide a forum for the presentation of papers of interest to those in the pharmaceutical industry. Membership is open to all pharmacists (registered or graduates of Schools of Pharmacy). Those who apply for membership prior to the fall meeting will be considered as charter members of the group. Information may be had from any of the following officers:

President, Walter G. Fredell, Lambert-Hudnut, Research; first vice-president, Paul A. Pumpian, E. R. Squibb & Sons, Patent Attorney; second vice-president, Maurice L. Rosenthal, Robeco Chemicals, Inc., Technical Sales; recording secretary, Gerald Siel, Warner-Lambert, Pharmaceutical Product Development; corresponding secretary, Vincent De Feo, Dodge & Olcott, Inc., Aerosol Chemist; treasurer—Dr. Harris B. Bernstein, E. R. Squibb & Sons, Pharmaceutical Formulations.

ACS New York Chairman

Dr. Nathan Weiner, assistant director of research for Endo Laboratories, recently assumed the post of chairman of the New York Section, American Chemical Society.

DR. JOSEPH H. BRANT

FRANK F. BLACK

Cowles Names Frank Black

Frank F. Black will become manager of Cowles Chemical Company's heavy chemical department Aug. 1, succeeding Earl F. Clark, who is retiring. Mr. Black has been manager of Cowles' organic chemical department and will continue to be.

Morningstar Buys Firm

Morningstar-Paisley, Inc. has bought Thurston & Braidich, importer and processor of water-soluble gums, according to an announcement by George J. Muller, president of Morningstar-Paisley. Thurston & Braidich is now a division of Morningstar, and its management will be Myers International.

V.P. of Helene Curtis Int.

John R. Torrens has been elected vice-president and general manager of Helene Curtis Internacional, S.A. He was formerly manager of the Latin American Division of Bristol Myers International and previously was with Bristol Laboratories.

Hazleton Gets NCI Contract

Hazleton Laboratories of Falls Church, Va. has been awarded a $144,000 contract from the National Cancer Institute for research on drugs to control cancer, R. G. Henninger, general manager of the laboratories, has announced.

Perfumers' Society Appoints

Edward J. Shuster, who heads the odor control department for van Ameringen-Haebler, Inc., has been appointed chairman of the Scientific Section and of the Symposium Committee for the current year.

J & J Asst. Med. Director

Dr. George M. Shadle has been appointed assistant medical director of Johnson & Johnson.

HOW TO WIN FRIENDS WITHOUT JUMPING THROUGH HOOPS

This after-shave lotion wasn't really a "dog." But it was far from being man's best friend.

Then its unhappy producer took a notion to send his lotion to Orbis for a check-up. Here, in our laboratories, we supplied the missing ingredient—the scent that meant the difference between money wasted and money in the bank.

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BANK ON ORBIS SCENTS
AND SAVE DOLLARS

William Black Retiring

William Black, who has completed seven years of service to Richard Hudnut and will reach the company's retirement age on July 22, was honored at a luncheon June 16 at Toots Schoor's restaurant in New York by more than 100 friends from various branches of the industry. Mr. Black spent most of his years with the company in the perfume laboratory where, as successor to the famous Howard Dusenberry, he carried on the tradition of Hudnut perfuming.

Speakers at the luncheon were Charles Pennock and Jerry Fowler, both closely associated with Mr. Black for many years; Dr. Donald Powers, technical director of Warner-Lambert; Jake Manheimer, 94-year-old dean of the essential oil trade; and Dr. Austin who, many years ago, was a chemist at Hudnut. Frazer V. Sinclair was toastmaster.

Asst. to Pres. of Bard

Irving A. Schlakman has been named assistant to the president of Bard Pharmaceuticals Inc., Yonkers, New York, it has been announced by Robert H. Broh-Kahn, M.D., president. Mr. Schlakman was formerly products control manager with the Purdue Frederick Company.

Product Manager for Anacin

Martin J. Dwyer has joined Whitehall Laboratories as product manager in charge of Anacin. He was formerly a vice-president and account executive at Lennen & Newll, Inc.

Ergenzinger Retires

O. W. Ergenzinger, a vice-president of Sterling Drug Inc., has retired after completing 45 years' service with the company.

DR. EDGAR A. HAWK

Dr. Hawk Joins Mead Johnson

Dr. Edgar A. Hawk has been appointed medical director of the Parenteral Products Division of Mead Johnson & Company, it has been announced by Dr. W. D. Snively Jr., vice-president and medical director of the firm. Dr. Hawk joined Mead Johnson from the Upjohn Company, with which he had been associated since 1954 as a staff physician.

Crookes-Barnes Names Jackson

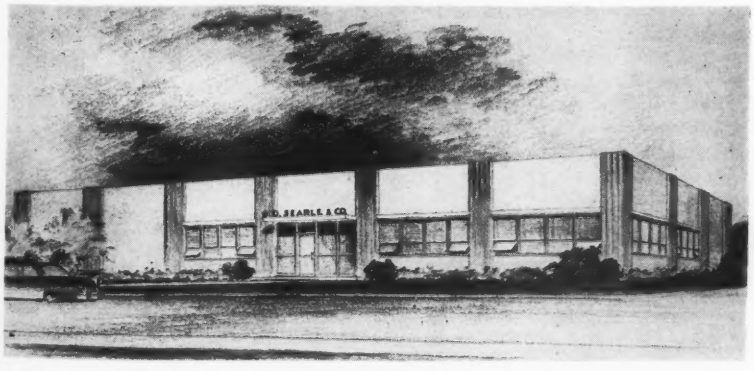
Arnold O. Jackson, Ph.D., has been appointed assistant director of clinical investigation of Crookes-Barnes Laboratories, it has been announced by Dr. Walter Hoskins, vice-president and director of clinical investigation.

Dr. Jackson, formerly technical director of G. W. Carnrick Co., has twenty-five years of scientific experience in the pharmaceutical field. He will be responsible for coordination of new product testing for Crookes-Barnes.

Geigy Houston Representative

W. F. Bliss, Jr. has been appointed technical sales representative at Houston, Texas, for Geigy Industrial Chemicals.

Architect's drawing of G. D. Searle's Pacific Coast regional office, to be occupied about Nov. 1.



DR. PAUL NUMEROF

Squibb Radiopharmaceutical Mgr.

Dr. Paul Numerof has been appointed manager of radiopharmaceutical services for E. R. Squibb & Sons. He joined Squibb in 1948 as a research associate at the Squibb Institute for Medical Research and in 1951 was named head of the Radioisotope Laboratory.

Dr. Numerof's experience and knowledge in the radioisotope field has led to an invitation by the chief of the pharmaceutical section of the United Nation's World Health Organization to collaborate in the preparation of standards and assays for medical isotopes to be added to the second edition of the International Pharmacopeia.

Promoted by Becco

John R. Hopkins has been promoted to assistant sales manager of Becco Chemical Division, Food Machinery and Chemical Corporation, and Edward M. Roth Jr. has been promoted to manager of the division's Upper New York sales territory, according to announcements by Albert P. Shutts, sales manager of the division. Mr. Roth's headquarters will be at Becco's main plant in Tonawanda, N. Y.

Squibb Institute Appointees

Dr. Leonard J. Lerner has been appointed section head of the endocrine section of the Biochemical Research Division of the Squibb Institute for medical Research. Dr. Max Ben has joined the staff of the institute and will be associated with the Division of Biochemistry.

Vick New Products Project Mgr.

William O. Conby has been appointed new products project manager of Vick Chemical Company's International Division.

Dry **vitamin E** of high potency...and it pours

You can now get DPi *d-Alpha-Tocopheryl Acid Succinate* in this dense, free-flowing crystalline form.

Improved flowability has been imparted to the dry product preferred for formulations that need the most vitamin E potency in the least bulk. Now it's better than ever for both tableting and the dry-filling of capsules. You can incorporate 100 I.U. of Vitamin E in a 5-grain tablet. Experimentally, we have made even higher-potency, larger tablets with it.

The bulk density of DPi *d-Alpha-Tocopheryl Acid Succinate* has been almost quadrupled. Its biological potency is 1210 I.U. per gram, as determined by bioassay and from stoichiometric comparison with N.F. X values for *d*-Alpha-Tocopheryl Acetate.

You can get immediate shipment from stock in several sizes of containers up to 50 kilos. For an evaluation sample and technical data, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

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some 3700 Eastman Organic Chemicals for science and industry

leaders in research and production of vitamin E

Distillation Products Industries *is a division of* **Eastman Kodak Company**

New Products Development Dept. Created by Lehn & Fink

In a major move to develop new products and to expand its line of cosmetics, toiletries, and proprietary drug items, Lehn and Fink Products Corporation has created a corporate department devoted exclusively to new-product development, it has been announced by Dr. Edward Plaut, president.

One of some fifty such departments among national companies, it will be headed by Dr. Thomas S. Harrison, who will have responsibility for new-product activities for three of the company's divisions: Proprietaries - Toiletries, Dorothy Gray, and Tussy Cosmetics.

Charles Fischbeck Retires from Uhe

Charles Fischbeck has retired from George Uhe & Co. After taking a prolonged vacation of several months, he looks forward to engaging in some sort of activity in the essential oil business in which he has spent his entire business life.

Mr. Fischbeck joined Ungerer & Company in 1911. He established his own company in January, 1938, and his firm subsequently merged with P. R. Dreyer Inc. In November, 1944 he joined George Uhe & Co.

Active in the industry over the years, Mr. Fischbeck was president of the Essential Oil Association for two years.

Wayne Petersen Joins Shulton

Wayne Petersen has been named sales supervisor in the consumer department of Shulton's Fine Chemicals Division, William H. O'Brien, vice-president, has announced.

Mr. Petersen will be responsible for the sale of consumer chemicals in Ohio, Indiana, Michigan, Wisconsin, Minnesota, West Virginia and parts of Pennsylvania, Kentucky and Illinois.

Prior to joining Shulton, he was a regional sales manager for Lehn & Fink Products Corp.

De Waldkirch Visits Here

Dr. Alfred de Waldkirch, production manager of L. Givaudan & Cie, S.A., Vernier-Geneva, Switzerland, recently visited the plant of Givaudan-Delawanna, Inc. His visit is a part of the continuous program of technical cooperation between the various companies of the international Givaudan organization.

SEYMOUR A. LUBMAN

Purdue Frederick Vice-Pres.

Seymour A. Lubman has been elected vice-president in charge of sales of The Purdue Frederick Company, it has been announced by Benjamin Schneider, president. Mr. Lubman, with the company since 1955, was formerly director of sales.

Murray Altman has been promoted to director of sales training, and Marvin Weinberg to assistant to the vice-president in charge of sales.

WILLIAM G. OHME

Ritchie Marketing Vice-Pres.

William G. Ohme, director of marketing of Harold F. Ritchie, Inc., has been elected vice-president of marketing and a member of the board of directors of the company, Maurice E. Bale, president, has announced.

Robert I. McKesson

Robert Irving McKesson, former executive-vice-president of the New York Quinine & Chemical Works, died July 7 at Salem, Oregon, where he has lived for the past ten years. He was 50 years of age. Since moving West, he has been serving the State of Oregon in an official capacity as a buyer of drugs. The great-grandson of John McKesson, co-founder of McKesson & Robbins, he was the son of Mr. and Mrs. Irving McKesson of Patterson, N. Y., who survive him. Also surviving him are his widow, Mrs. Jacqueline Haley McKesson; a son, John Henderson McKesson 2nd; a daughter, Ann Winthrop McKesson; and a brother, Malcolm McKesson.

Robert McKesson was an alumnus of St. Paul's School, Concord, N. H., and Harvard, class of '31. He enlisted at the outbreak of World War II and rose to lieutenant colonel, winning the bronze star and being promoted on the battlefield during the European campaign.

Dr. William W. Hosler

Dr. William W. Hosler, 57, vice-president in charge of research and production for Plough, Inc., died in Memphis on June 9, ten days after suffering a stroke.

Dr. Hosler joined Plough four years ago. Previously he was vice-president in charge of production and laboratories for Strong, Cobb & Co. His first job at Plough was director of pharmaceutical production. He had been a vice-president for two years.

Dr. A. E. Sherndal

Dr. A. E. Sherndal, vice-president of Winthrop Laboratories when he retired in 1955, died June 12 at Columbia County Memorial Hospital, Hudson, N. Y., after a long illness. He was 72 years old.

Dr. Sherndal had been a chemist for 48 years, of which 38 years were spent with Winthrop and its parent company, Sterling Drug Inc. He made a number of important contributions to the field of synthetic chemistry. Probably his major achievement was the part he played in helping develop, synthesize and produce the antimalarial drug Atabrine, which was used during World War II after the Japanese cut off quinine supplies from the Netherland East Indies. His accomplishment won him wide personal acclaim, including an honorary degree of Doctor of Science from St. Lawrence University in 1943.

He lived in Old Chatham, N. Y. Surviving are his wife, the former Beatrice Jacques of New York City; two daughters, Mrs. John Agnew and Mrs. Theodore Jones, and six grandchildren.

What bismuth salts do you need

for your pharmaceutical preparations?

You name the exact type of Bismuth Compound you need and the chances are J. T. Baker Chemical Co. can supply it—for Baker is a specialist in the production of a wide variety of Bismuth Salts of high chemical purity and precise physical specifications.

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Bismuth Salts are made from specially selected bismuth metal, reacted under close control. This careful processing is important when these salts are used as ingredients, or used as a starting point for the synthesis of organic bismuth compounds.

Many leading drug and pharmaceutical houses value Baker fine chemical purity and uniformity as a safeguard to the quality of their own products. If you are a user of Bismuth Salts or other fine chemicals where "Purity by the Ton" is required, may we send you samples and prices? Let us know your requirements.

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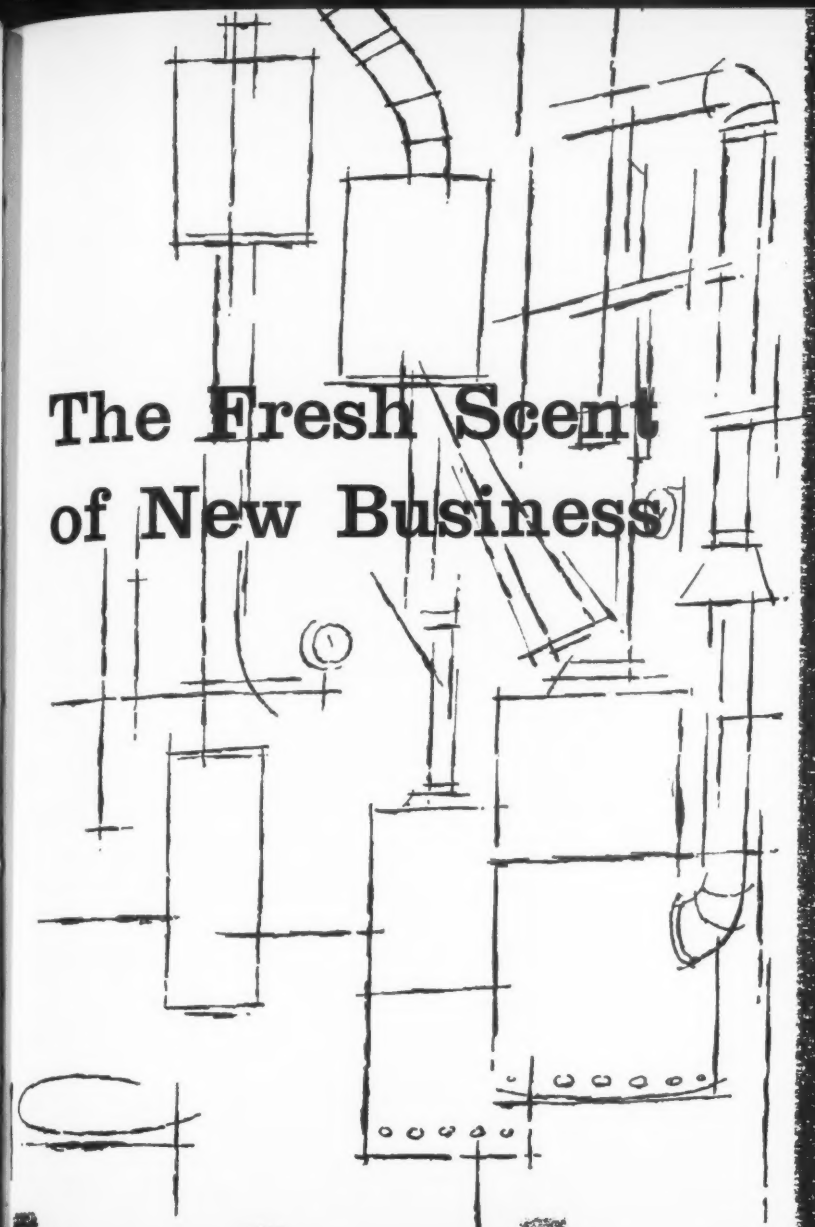

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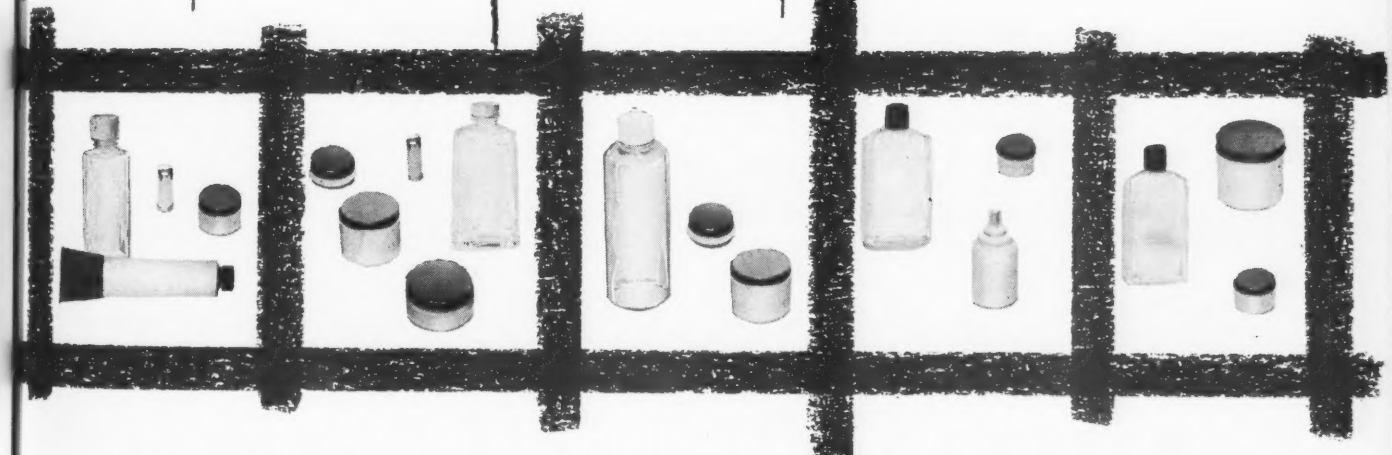
The skilled perfumers and chemists in the *Synfleur* laboratories have been concerned these past 67 years not only with pure craftsmanship of the highest order, but with making that craftsmanship bring results in new business for you as well.

Through the continued use of new scientifically developed perfume materials, *Synfleur* has always been a pace-setter in widening the range of scenting possibilities open to the cosmetic chemist.

Whether your need for fragrances lies in the formulation of a new product, or the revitalizing of an old one, it can be met most effectively by *Synfleur*.



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by

COLTON-Alpha

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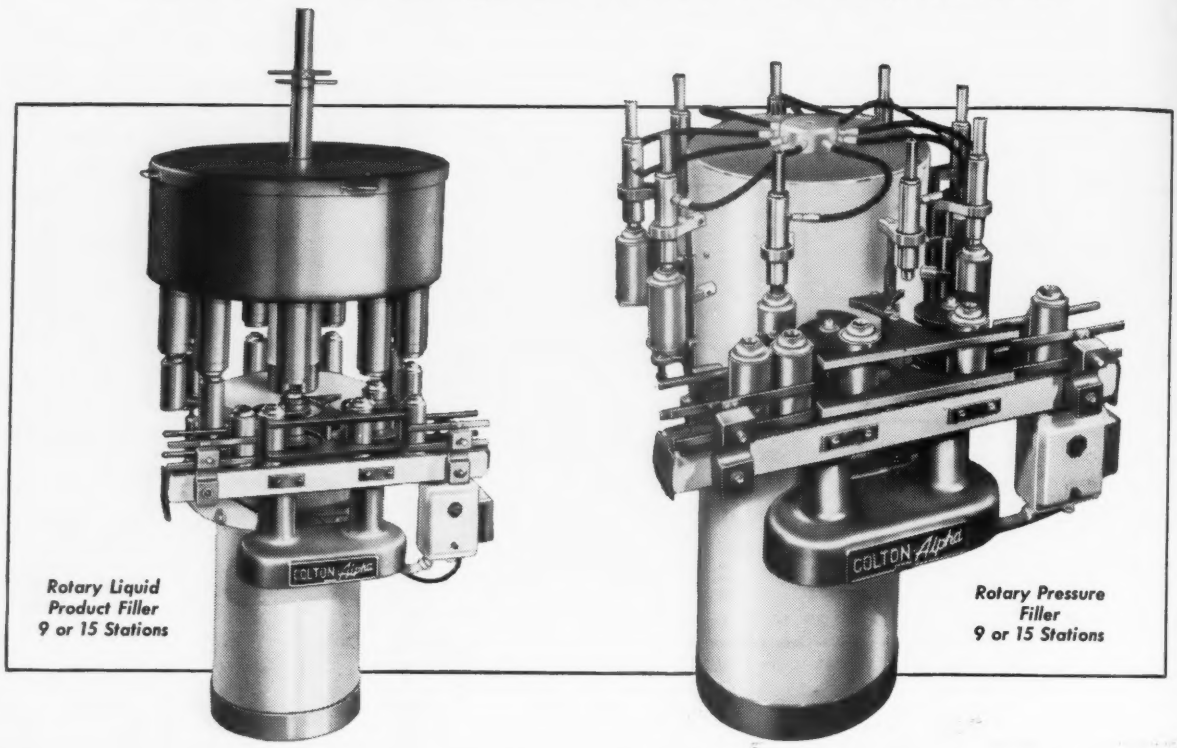

Rotary Liquid Product Filler 9 or 15 Stations

Rotary Pressure Filler 9 or 15 Stations

Shown here are two of the newly-engineered units in the Colton-Alpha line of high-speed, high-production rotary equipment for pressurized packaging. This line includes:

(1) Rotary Liquid Product Filler; 9 or 15 stations
(2) Rotary Crimper (Vacuum optional); 9 or 15 stations
(3) Rotary Gasser (Shaker optional); 9 or 15 stations
(3a) Rotary Pressure Filler; 9 or 15 stations
(4) Rotary Tester; 9 or 15 stations

These units are co-ordinated for complete flexibility in size and speed for changing production line procedures.

The Colton-Alpha straight line and hand-operated laboratory equipment includes:

(1) Product Filler
(2) Air-operated Crimper
(3) Gasser and Tester
(4) Gasser and Shaker
(5) Pressure Filler

Your inquiries are invited.

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Management Forum

By FRANCIS CHILSON
INDUSTRIAL CONSULTANT

Excessive Bigness

I have always argued that corporations should not be allowed to become too large, not only because so much economic power is concentrated in the hands of too few men, but also because economic power can very easily be translated into political power. Our history is full of instances where senators, congressmen, state officials, judges and even presidents were bought and controlled by greedy corporations.

I abhor excessive size in corporations not only because of economic and political dangers inherent in bigness but also because they are too inflexible and too inefficient. There is no doubt in my mind that the present recession was caused by the three big automobile companies: General Motors, Ford and Chrysler. They fought a colossal battle for domination of the automobile market. Their insatiable demands for steel and other materials caused excessive expansion all their suppliers. They siphoned off labor from other industries and from the farms, causing excessive migration from all over the country into the cities where their plants are located, leaving the cities to deal as best they could with problems of housing, schools, hospitals, sewerage, water supplies and other public services. Their incessant, misleading and often false advertising forced an excessive number of automobiles into the market and customers into the hands of the installment bankers and loan sharks. At the same time they were selling their customers an increasingly inferior and more expensive though gaudy product.

When their customers rebelled as I predicted they would in this column a couple of years ago, the automobile companies had to retrench. People were laid off by the tens of thousands and the retrenchment had its deleterious effect all through the national economy. And the automobile companies could not, because they are so large and inflexible reverse themselves quickly and provide the cheaper, smaller more economical car that their customers want. Designs and tooling have already been done for 1959 and cannot now be undone, and what is even worse a good part of this work has been done for 1960.

There is no doubt in my mind that we'd be better off with forty companies doing a business of a half billion dollars each than with three doing a total of twenty billion. It is difficult to define "largeness" as related to corporations, particularly when we have such examples of fine, dedicated public service on the part of the public utility companies, the American Telephone and Telegraph Company as an example. Such companies in a big country must be big. But they must—and are—regulated by the government. We don't want that to happen to corporations selling consumer goods or industrial products.

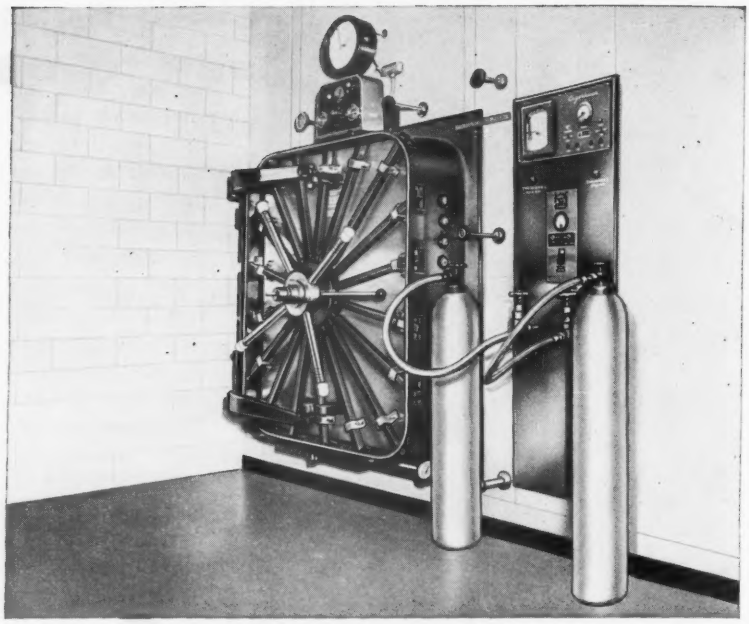
I think that a good way to keep the size of corporations within practicable limits would be to impose taxes on sales of corporations making specific products in volumes in excess of half a billion dollars annually, graduating the taxes upward so that eventually they would confiscatory. We have through the Clayton Act and other legislation limited restraint of trade, price fixing and other forms of collusion contrary to the public interest and there is no reason why limitations cannot be imposed on size through taxation on surplus sales. Excessive size is contrary to public interest. This would not prevent any corporation from operating in several different industries as DuPont does since the taxes would be limited to specific products or specific classes of product.

It's a big and inherently dangerous problem. But as a consumer I do know this about automobiles: that when there were forty automobile companies in operation one could get a damn sight better car than one can get now for twice the price.

APMA R.I.P.

To me the notable feature of the final APMA convention was a visit to Cristoforo Colombo Bowman's boat, The Flying Close. This name was chosen because Charley Bowman can navigate closer to a rock

Looking for authoritative answers on Ethylene Oxide Sterilization of Heat- and Moisture-Sensitive materials?



American Sterilizer installation of large rectangular autoclave with automatic control for carboxide gas sterilization of heat- and moisture-sensitive materials. Routine sterilization with pressure steam is also accomplished automatically in this unit. Other equipment available ranges from the 16″x16″x30″ self contained *Cry*-O-Therm to 60″x 66″x 120″ single- or double-door models.

WHY ETHYLENE OXIDE?

As long as ten years ago, American Sterilizer researchers settled upon Ethylene Oxide (inerted with suitable diluents) as the agent of choice for the rapid and dependable sterilization of heat- or moisture-sensitive materials. Advances in such varied fields as pharmaceuticals, surgical supplies and packaging have greatly broadened the range of applications for which this versatile sterilizing agent is recommended. But they have also clearly signaled the need for a precise relationship between such factors as temperature, humidity, pressure, exposure, concentration and diluents in effecting optimum conditions for each specific application.

WHY AMERICAN STERILIZER?

Our ten year study of the characteristics of Ethylene Oxide has been paralleled by an equally thorough development of instrumentation. As a result, American Sterilizer techniques and installations are successfully serving an ever-widening range of industrial and commercial processes requiring the sterilization of heat- and moisture-sensitive materials.

Because we have accumulated the largest body of data and experience in this field, we can advise you authoritatively. Because we offer the broadest range of automatic equipment for standard or special application you enjoy significant benefits of economy and continuing efficiency.

SEND FOR THIS FREE BASIC LITERATURE

Basic literature on "Ethylene Oxide Sterilization for Industry" is available upon request. Engineers of our Scientific Division are "on call" for consultation on processes, techniques or packaging and Experimental and Pilot Plant facilities are available through our Research Division.

Write for Bulletin 1C-602

AMERICAN STERILIZER

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Scientific Division

than any seaman whoever wore an oilskin without actually denting the rock. Many a time he veered off a rock with only a few scratches on his bottom. But friction and barnacles soon tell and Charlie now has a new fibre glass bottom. (Considering the nature of waterfront saloons it is to be hoped that he doesn't also have a glass jaw.)

When Charlie had the boat rebottomed he also decided to equip it with sails. It looked so pretty when it was all decked out that he was going to name it Flying Cloud after the famous clipper ship. But his wife, who is a very practical person, suggested Flying Close would be more appropriate in view of Charlie's well known ability as a navigator. Charlie had the mast equipped with a hinge so that, if he forgets to wait until the draw bridges are lifted, he won't have a flying cloud of canvas around his neck. The mast simply folds back.

Charlie and his crew started back to New York on the "outside" that is up the coast. The last report I had from him he was going through the Panama Canal. Somebody had let the bubbles out of the sextant and put the chart from the wrong ocean on his navigating table. But he'll make it. Wind, sun, storms, hail and rocks—he always does.

ADMA—RIP.

At the last meeting of the ADMA the Clan MacNeil from Philadelphia threw a Highland Fling. The haggis was served by a beautiful Scotch lassie and the spirit of the heather flowed like water. There were a few genuine Scotsmen present beside the MacNeils. Among them, Don Brisbane, Chancellor of the Exchequer, of Hoffmann LaRoche, who was flitting about, flashing his lambent blue eyes at all the beautiful ladies.

"Losh! If I had only thought to bring me wee kilties and me bagpipes!" Don said to me. "I could dance a hornpipe on one of the tables." This statement by the way shows the civilizing influence of life in America. In Scotland Scotsmen never dance the hornpipe unless it is on other Scotsmen—although they have been known to make a few exceptions in favor of recumbent Englishmen.

I'm glad Don didn't bring his kilts or his bagpipes. When Don gets his arm around a bag you can't stop him. I mean a bagpipe bag of course. Once upon a time when Don was squeezing a squealing bag on a moonlit night along the shores of Loch Ness, the Monster was charmed out of the water and threw an affectionate coil around them. Don and the bagpipes I mean. Don was never the same after that and to this day will not go near moonlit water. The Loch Ness Monster, Don insists, is no fable. It is a fact. He saw it. He insists however that the ghastly reptile is not Scotch but Irish, being one of the snakes St. Patrick brought over from Ireland when the saint came home to die. And to not one of his friends will Don reveal where he got that special mountain dew.

Production Line Filling of Aerosols With a Variety of Liquid Propellants

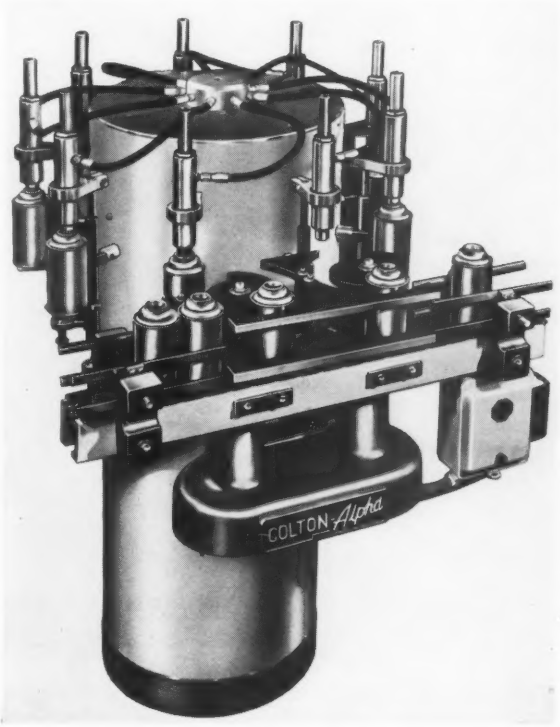
A new No. 1651 line of Colton-Alpha high speed production line rotary pressure fillers that fill aerosol-type containers with several different types of liquid propellants has been announced by Arthur Colton Company, 3400 East Lafayette, Detroit 7. The fillers feature unique precision pressure filling heads that will handle butane and propane straight hydrocarbon-type propellants as well as the usual fluorinated hydrocarbon types with complete safety.

These rotary type machines are made in standard models that will fill containers with propellant following product filling, dispenser valve insertion and valve crimping operations. These machines are made with a variety of stations and fill capacities to suit production requirements. Production rates of up to 200 cans per minute can be achieved by the machines, which have adjustable fill capacities of up to 300-grams of propellant.

The propellant is fed through the filling heads and into the containers under pressure (500 to 600-psi) provided by an auxilary booster pump and accumulator unit. This method assures that the propellants will remain in their liquid state during the filling operation without the use of additional refrigeration units.

The machines are adjustable to handle containers ranging from 3 to 16-oz capacity.

Basically, these new Colton-Alpha pressure fillers consist of a circular steel base that supports a ball-bearing mounted rotary head unit. A 1/3-hp motor in the base drives the head through a gear reducer, variable speed drive, V-belt-drive and spur gear ar-



rangement. The same motor drives the star index wheel at the front of the machine through a chain drive.

Pressure filling heads and container supports are mounted around the head at each station. A stationary cam on the base at the front of the machine raises and lowers the filling head nozzles into and out of contact with the containers.

In operation, containers are removed from the conveyor line one at a time by a star index wheel and placed on the container supports on the rotary head. The filling head nozzles are lowered to contact the containers which are then filled with propellant as they travel around with the rotary head. The containers are placed back on the line by another star wheel after filling.

Propellant is directed from the accumulator into a rotary valve on the top of the head of the filler. Flexible hose carries the propellant from the rotary valve to each pressure filling head.

Raising the filling head and removing the container causes the filler head to fill with propellant for the next filling cycle. During the refilling of each filler head, an internal piston is raised to a positive stop to assure maximum container fill accuracy. Stops for all filling heads can be simultaneously adjusted to provide different fills. Individual micrometer stop adjustments are provided for each filler head. If no container is placed in a station, the filling operation will not occur, thereby providing a no-can, no-fill feature.

No air or electrical controls of any kind are required for the filling operation, thereby avoiding explosion problems when handling butane and propane propellants. Explosion-proof motors are provided on machines handling such explosive propellants.

The new No. 1651 Colton-Alpha aerosol pressure fillers occupy a floor space approximately 30 by 40-in. and are about 60-in. high.

Conveyer Speeds Packing Case Handling

Packing case handling in the Memphis, Tenn., plant of Plough, Inc., has been greatly simplified and speeded by the installation of a flexible overhead conveyor system. The new system, engineered by the Chainveyor Corporation, replaces a timeworn manual handling method. Under the old method, glass containers were dumped at the start of the production line and empty cases placed on the floor for pick-up. Porters collected the cartons and hand-carried them to the end of the line for repacking with filled containers.

The conveyor installation has speeded this handling operation. Operators now place empty cases on the conveyer system for automatic transfer to the end of the line. Manual handling and stacking are completely eliminated.

The conveyor is routed wherever desired, as any combination of turns is easily obtained by joining together horizontal, vertical up, and vertical down curves. The ability to negotiate 16-inch radius curves

LOOK TO U.S. *for Every* LIQUID FILLING NEED!

MODEL B-49 STRAIGHTLINE VACUUM FILLER. Most automatic one-operator multiple filler. With or without discharge conveyor. Contact parts of stainless steel, plastics on order. Adjustable for container sizes from AGST to gallon size finishes. Send for Model No. B-49 Bulletin.

MODEL B-2 VACUUM FILLER. Continuous production. Two containers always filling. For liquids and semi-liquids. Vacuum is adjustable, and flow is regulated. Handles containers up to 4⅛" dia. Fast, efficient. Send for Bulletin B-2.

YOU CAN SPARK your entire packaging operation *with the right filler!* Anything short of that can snarl your packaging pace.

With decades of liquid filling know-how, U.S. can custom-engineer your filler to fit your operation *precisely.*

FOR RECOMMENDATIONS, please specify: *Your product, size and type container and desired filling rate per minute, hour or day.* No obligation implied. Address the home office.

U. S. SIPHON FILLER. For all liquids including foamy products or products that do not permit agitation. Stainless steel tubes; acid resistant glass lined tank. Adjustable for all containers. Send for the Siphon Bulletin.

HAND FILLER. Highly perfected advanced type. Send for the Hand Filler Bulletin.

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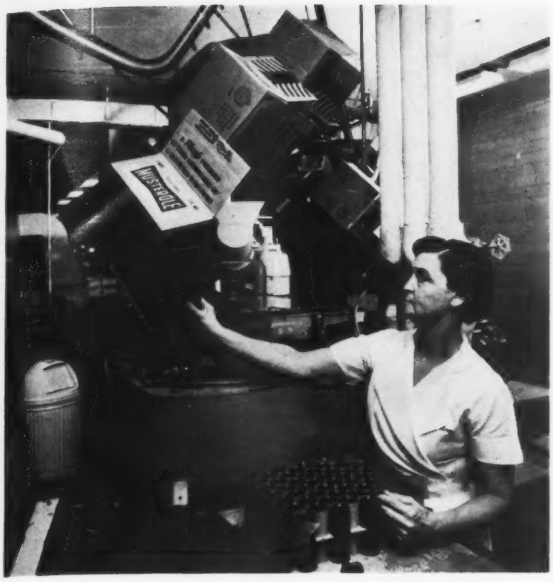
SPECIALISTS IN LIQUID FILLING AND CONTAINER CLEANING EQUIPMENT



without traction wheel or roller turns also contributes greatly to the system's adaptability.

Although the conveyor is employed only for lightweight carton handling in this situation, reports indicate that it has strength and capacity comparable to much heavier conveyor equipment. It can handle loads up to 60 pounds per foot, and individual loads up to 120 pounds may be carried on load bar attachments.

Bottles and Vials Can Be Stoppered In Vacuum Chamber of Freeze-Dryers

A device for automatically setting the stoppers into the bottles or vials in which material has been freeze-dried, while they are still within the vacuum chamber—to prevent any possible contamination once vacuum is broken—has been developed by F. J. Stokes Corporation, Philadelphia, and is now available in the company's line of freeze-dryers.

The new Stokes automatic stoppering device consists of a thin steel pressure plate, suspended under each shelf, and operated by differential pneumatic pressure. The stoppers are held above the necks of their respective bottles in special holders, permitting drying to proceed unobstructed.

Other types of automatic stoppering devices use mechanical or hydraulic actuation for the pressure plate. The Stokes design has the advantage of requiring no additional openings in the vacuum chamber, and hence no mechanical seals to maintain against leakage.

Other advantages of the Stokes automatic stoppering device are:

1. The bottles are closed while still under the original processing vacuum, which avoids any possibility of contamination, either biological or otherwise.

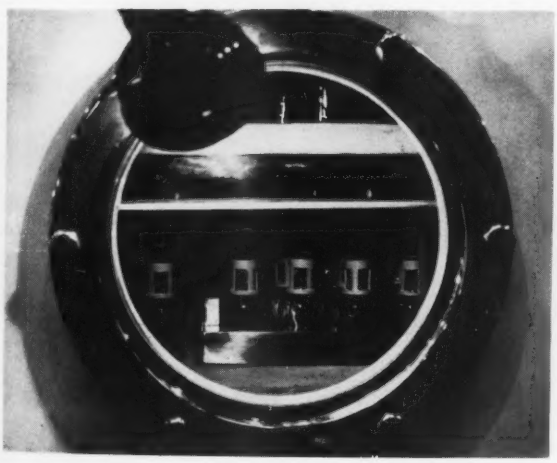
2. Fluted stoppers are not required. This avoids any restriction to the outflow of water vapor during the drying operation, which would slow up the drying action and also might cause the temperature of the product to rise as much as 10 to 15 degrees, resulting in the loss of active properties of delicate, heat-sensitive materials.

3. The use of standard long-necked stoppers provides greater surface contact between the stoppers and the necks of the bottles, and thus makes for a more permanent, longer-lasting seal than when fluted stoppers are used.

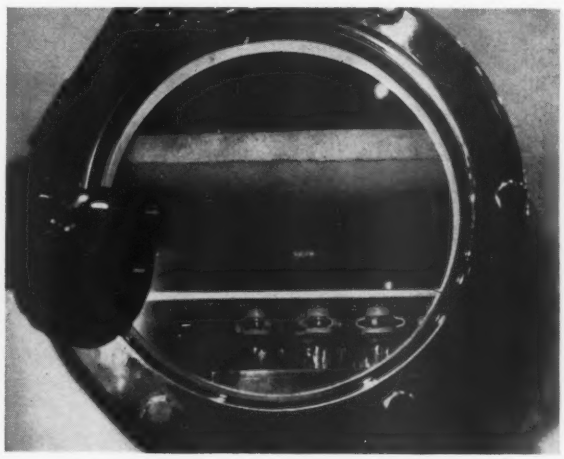
4. The Stokes device allows bottles of different heights and shapes to be processed simultaneously on different shelves, which is not possible with other types of stoppering equipment. And any number of bottles or vials on one shelf—from a partial load to a full load—can be closed automatically without adjustments.

5. No time-consuming and delicate adjustment of the length of travel of the pressure plate is required, in contrast with ram-actuated plates.

Before stoppering: Stoppers are held in position above the necks of their respective bottles, and material in unstoppered bottles is being dried.



During stoppering: Drying is complete. Pressure plate has driven stoppers into the necks of the bottles without breaking the original processing vacuum.



OTHER STOKES EQUIPMENT AT WORK FOR SCHERING . . .

Schering uses a Stokes 566 Multi-layer Tabletting Machine for perfection in multi-layer tablets. Stokes exclusive layer pre-compression permits periodic weight checks—gives clean, sharp separations.

Part of a bank of Stokes Polishing and Coating Pans at Schering. Here, standard Stokes machines have been neatly built into a custom installation behind gleaming stainless steel panels fitted with glass doors.

Operator Kenneth W. Shaw fills the hopper of one of the Stokes high speed Model 540's at Schering. This 41 station machine produces many Schering products, such as Chlor-Trimeton-Maleate, at rates in the order of 3000 tablets per minute.

Accuracy is important and is checked often at Schering. The centralized control area provides constant visual indication of speed and pressure at the punches. Single hydraulic release control permits absolute tablet uniformity from both compression stations of the double sided Model 540.

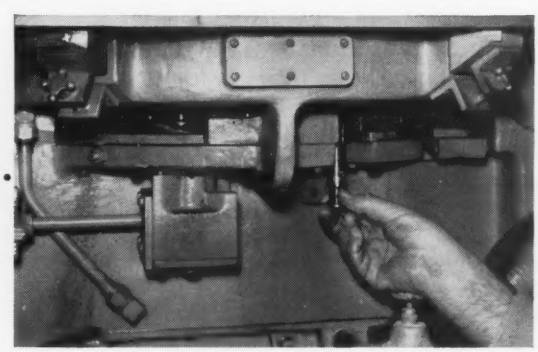
Dependable high-speed production for Schering...with Stokes pharmaceutical equipment

Schering Corporation, Union, New Jersey, demands maximum reliability, efficiency and speed in producing their broad line of steroid hormones and other pharmaceutical products—both ethical and over-the-counter.

Schering's tabletting operation depends on Stokes equipment. Most recently installed are two Model 540 Rotary Tabletting Machines that are in constant operation 16 hours a day, 5 and 6 days a week, manufacturing a variety of drug products. Chlor-Trimeton-Maleate anti-histamine and anti-allergic formula, for example, is produced at speeds up to 3000 per minute. These tablets are 200 mg., imprinted and scored. The high speed and dependability of this operation keeps tabletting costs at their lowest possible level.

Schering takes advantage of the complete line of Stokes pharmaceutical equipment. In addition to operating many Stokes tabletting machines—including conventional and multi-layer—Schering processes their products in Stokes mixers, oscillating granulators, coating pans and polishing heads. And, of course, Schering uses long lived Stokes punches and dies in their tabletting machines.

Find out how this advanced design pharmaceutical equipment can save on your own production. Write to Stokes for complete information, or call your nearest Stokes office.



Maintenance problems are small at Schering. Here, the photographer caught the operator changing punches—snapped this picture because it illustrates the ease with which such service is accomplished on the Model 540.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Perfumer's Shelf

Acetylene Esters

The esters of the acetylenic acids are of considerable interest to perfumers, the two most widely used being the methyl heptin and methyl octin carbonates. After being widely acclaimed, they appeared to fall for a time into disrepute. This temporary loss of prestige was due partly to competition from other and newer "green" notes but more especially, according to F. V. Wells (*S.P.C.* 31:472, 1958) from misuse. It is easy to be too lavish with these rather deceptively potent materials. M.H.C., with its fresh, penetrating and at first slightly fruity odor, is almost indispensable as an odorant of green, violet-leaf tonality. Used in a 5 per cent dilution, it not only gives excellent effects in violet, cassie, sweet pea, mignonette, stephanotis, gardenia, freesia and other perfumes—even including traces in certain rose and lavender bouquets —it also adds strength and character to the first emerging notes of chypre and fern. Its use in the shading of ionones and isoeugenol is also deserving of mention here.

M.O.C., the octin carbonate, has a rounder, fuller and deeper tone than M.H.C., which it can often replace (or partly replace) with advantage. Its comparatively long-lasting odor is smoother and more generally floral in character than that of M.H.C. It is, of course, useful in the perfuming of toilet soaps.

Cineole in Spearmint Oil

Recent investigations on the flavor properties of spearmint oil led P. Z. Bedoukian (*P.E.O.R.* 1958, p. 169) to suspect the presence of 1:8-cineole in this oil. Its occurrence had been reported in spearmint oil obtained from plants cultivated in Germany some years ago and in Russian spearmint oil which was found to contain a large proportion of this oxide. It was recently reported that Indian spearmint oil contained cineole to the extent of 31.4 per cent.

The identification of small amounts of cineole in essential oils rich in terpene hydrocarbons has presented considerable diffculty. Since cineole has a boiling point very close to that of the terpene hydrocarbons, it cannot be readily separated from them by fractional distillation. Chemical methods of separation are not practicable when the amount of cineole is small. Recently developed chromatographic techniques, however, make it possible to separate with great ease small quantities of oxygenated terpenes from large quantities of terpene hydrocarbons.

One thousand grams of spearmint oil was subjected to a careful fractional distillation through a four-foot column packed with protruded packing. The terpene fraction, b.p. 55-58° at 11 mm, 210 g., was used for the identification of cineole.

The terpene fraction was chromatographed through a five-foot column containing 600 g. of silica gel. Three litres of pentane were used in eluting the hydrocarbons from the oil. The oxygenated constituents were then eluted with 700 ml of ether. The ether was removed under low vacuum at room temperature and 30 g. of an oil was obtained having a strong spearmint-cineole odor. On fractional distillation of this oil through the four-foot column, five fractions were obtained. On cooling the fractions, two fractions amounting to 14 g. (b.p. 51-53° at 11 mm) crystallized. The crystals in the two test tubes were combined, recrystallized, and again freed of any adhering oil. The cineole thus obtained had characteristics comparable with commercial U.S.P. cineole obtained from eucalyptus oil.

Slight differences in odor and physical properties are due to adhering trace impurities which are difficult to remove.

These data were considered sufficient proof of the occurrence of 1:8 cineole in American spearmint oil.

Cinnamic Acid

Cinnamic acid can be synthesized from benzaldehyde and acetone, followed by oxidation of the benzalacetone. Futi Su and Wan-Chiu Chen (*Journal Chinese Chem. Soc.* December 1956, p. 87) have studied optimum conditions for the process. Benzalacetone results from the reaction of benzaldehyde with acetone in the presence of alkali. The reaction is allowed to proceed for 20 hours at 0°C.; after allowing the reaction mixture to stand for two days, acetone was removed by distillation and benzalacetone crystals were separated. Optimum concentration of sodium hydroxide is one per cent. The benzalacetone is oxidized with sodium hypochlorite solution to cinnamic acid and chloroform. The optimum ratio of benzalacetone to hypochlorite is 1:3; the maximum yield of cinnamic acid, 88.2 per cent, was obtained at 0°C. with normal sodium hypochlorite solution.

Olfactory Discrimination

It seems to be fairly evident that somewhere in the receptor system there must be some analytical process which can respond differently to diverse smells. Specificity of reaction in different locations in the olfactory bulb has in fact been observed but no explanation of the differing degrees of sensitivity of individual cells to diverse odors has been put forward other than very speculatively.

Linalool 'Roche' is uniform — unvarying in odor — in constant supply at a stable price —

Linalool 'Roche' is more stable than natural linalool. For existing compounds, we can assist you in adjusting Linalool 'Roche' to simulate natural linalool. Also available is synthetic Linalyl Acetate 'Roche' with an equally high quality odor. 'Roche' Aromatics are available through principal essential oil distributors. AROMATICS DIVISION, HOFFMANN-LA ROCHE INC, Nutley 10, N.J.

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NEROLIDOL 'Roche'

Now available at attractive price. Serves the same purpose in compounds as the sesquiterpene alcohols in natural oils. Has excellent blending and cohesive properties. Delicate lily-like odor. Can be used as a substitute for farnesol.

GERANYL ACETONE 'Roche'

Completely new, inexpensive material. Has basic rose type of odor, resembling rhodinol formate or geranyl formate, but with good green note. Aldehyde-like top note. Stable in soap.

AROMATICS DIVISION
HOFFMANN-LA ROCHE INC Nutley 10, N.J. NUtley 2-5000
New York City: OXford 5-1400

There is, however, a correspondence between two physical quantities to which attention should be drawn because it may have a bearing on the way in which we can discriminate between smells.

One of these physical quantities is the length of the olfactory rod, the process which joins the olfactory nerve to the free border of the epithelium, where it terminates in a small swelling from which the olfactory hairs spread.

The other quantity is the amplitude of the whole molecule vibrations of the odorant molecules; these vibrations are revealed by the absorption lines of the substances in the infra-red region and by their Raman shifts.

—R. W. Moncrief, *P.E.O.R.* 49:27, 1958

Jasmin Extraction

The work described in this report by M. Lotfy, H. Arcf and A. A. Hissein (*P.E.O.R.* 1958, p. 297) was carried out to study the hydrolytic enzymatic activity in the jasmine flower, to compare the methods of extraction of essential oils in terms of their yield, under various conditions. Also to compare the analytical characteristics of concrete, absolute and enfleurage absolute oils.

Jasmine flowers used in this investigation were obtained from 'Dokki Farm', Giza. The flowers were picked at four different stages of maturity, namely, pre-blooming and non-odoriferous, ready-to-bloom and non-odoriferous, half-blooming and odoriferous, and full blooming and odoriferous flowers.

Unpurified lard and tallow were obtained from the Slaughter House, Cairo. 'Nabatine', a hydrogenated cottonseed oil with amelting point of 55°C, was used.

The results of these experiments showed that the enzyme extract at pH 7.2, activated by 0.2 per cent, exhibited the highest activity. These results agreed with Miller's observations and indicated the lipase-like activity.

The enzymatic activity was determined at different pH values ranging from 3.3 to 11.4. The results show that the optimum pH value was about 6.4.

After picking, jasmine flowers continue their physiological activity of developing and giving off essential oils. The blooming stage at which this physiological activity is at its peak, and consequently producing the highest yield of essential oil, is not very well known.

In this work, experiments were carried out to compare the yield of the main blooming stages, namely, ready-to-bloom and full blooming flowers.

The yield of the ready-to-bloom flowers is higher than that of the full blooming ones. The average increase is 19.3 per cent. Furthermore, the treatment with HCl increased the yield of the ready to bloom flowers to an average of 17.9 per cent. Results also showed that Nabatine is a better solvent than the prewashed Nabatine and than the mixture of lard and tallow.

On comparison, the absolute extract of the unwashed Nabatine was more liquid and more homogenous than the rest. On the other hand, the absolute of the lard and tallow mixture possessed a fatty odor.

However, the washed Nabatine oil possessed the best odor.

The highest yield of concrete oil has been reported as 0.38 per cent with an absolute content of 53 per cent, while the lowest has been 0.24 per cent with an absolute of 42 per cent in France and French Guinea, respectively.

Experiments were conducted to extract the concrete and absolute oils with petroleum ether at different blooming stages.

The highest content of both concrete and absolute oils is reached in the half blooming stage plus HCl, and in the artificial blooming plus HCl. The seven samples were also tested for odor. The half blooming plus HCl and the artificial blooming plus HCl showed the best results.

Lindert and Fondard reported that grinding of flowers before extraction increased the yield of oil. Poucer found that subjecting the flowers to light pressure before extraction also increased the yield.

In this work full blooming flowers were, prior to petroleum ether extraction, either finely ground with sand under the solvent in a mortar, or frozen at—15°C. This experiment was repeated thrice over a period of twelve days. The average results show that freezing or grinding increased the yield of concrete oil to 14 and 24 per cent, respectively. However, the ratio of absolute to concrete oil remained constant in all cases. It seems therefore that freezing or grinding affected only the yield and not the quality of the oil. These results are apparently due to the mechanical destruction of the flower cells, freezing and grinding liberated the enzyme and also facilitated extraction.

Musc 781

Polak & Schwarz have now introduced a low-priced macrocyclic musk with outstanding properties, under the name of Musc 781.

Musc 781, a colorless liquid, is a pure, stable compound. It causes no discoloration, either in soap or in creams and it is very soluble in the usual solvents. It possesses a fine, clean musk-line odor and an almost tantalizing suggestion of santalol. At the very top of the musk odor can be found an attractive fruitiness.

Musc 781 has the unique property of appearing to give odor effects at all stages of the evaporating perfume. Its woody-musk odor has a pronounced effect on the top, middle and back notes. Since it does not discolor nor form colored compounds it can be used in perfumes designed for use in soaps and creams.

Boronia Absolute Otto MM&R

Magnus, Mabee & Reynard, Inc. announce that arrangements have been completed for the direct importation of Boronia Megastigma Oil (known also as Boronia Flower Oil) as Boronia Absolute Otto MM& R from the world's largest primary prdoucer. Hitherto commercially unobtainable in appreciable quantities in the United States, the oil has long been known as a distinguished component of many of the finest French perfumes.

Boronia Absolute Otto MM&R is a heavy, green liquid soluble in ethyl alcohol, mineral oil and essential oils. It blends well with orange blossom, jasmine, rose, violet, etc. It has a pleasant long-lasting and tenacious odor suggesting a combination of cassie and violet modified by a slight wood-fruit note. It is a valuable fixative and traces impart body and roundness to the perfume composition.

Cosa-Tetracyn (Pfizer) is tetracycline with glucosamine to provide consistent tetracycline blood levels, available as 125 mg. capsules in bottles of 25 and 50 and 250 mg. capsules in bottles of 16 and 100.

Recognition

The cosmetics chemist's thinking starts with the consumer. He knows that the important point about the point of sale is this — the shoppers' first introduction to your product is through sight and smell. And when they encounter a fragrance that they recognize as authentic — they're delighted, and they're *yours!*

So many leading cosmetics achieve this clean, fresh, floral brilliance with Verona products. Why not try some of the special Verona developers and extenders listed at the right — see for yourself how beautifully they bring out the latent qualities, hit and *hold* the piquant round notes you're striving for. We will gladly send samples on request.

A FEW VERONA SPECIALTIES

RESEDALIA, an acetal.
VERONOL, an aldehyde.
CYCLAMAL, cyclamen aldehyde.
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Compounder's Corner

Society of Cosmetic Chemists Papers

A. E. Sobel discussed the "Percutaneous Absorption of Vitamin A", using rats as test animals. Further studies are necessary to determine whether the observations are applicable to other species, including human beings. Vitamin A is absorbed through the skin, with one-tenth to one-fifteenth as much liver absorption as with oral administration. The vehicle influenced absorption which was poor from cottonseed oil compared with corn oil. Increased storage followed the use of vitamin A in corn oil containing vitamin E. Vitamin A seems to be necessary for the normal reproduction of basal cells of the skin; topical application seems to act on the skin directly rather than through absorption and recirculation of the vitamin.

G. Levy delivered the paper on "Natural Gums in Cosmetic Formulations" and pointed out that their usefulness can be extended by using them under optimum conditions. With studies of tragacanth as an example, the effects of pH, temperature, complexing agents, additives, methods of preparing solutions and possible interaction with preservatives were considered.

J. W. McCutcheon discussed the problems of "Detergents in Toilet Bar Manufacture", including the defatting action on the skin and poor rinsability. The discussion included raw materials such as alkyl aryl sulfonates, alkyl methyl taurides, soap extenders and binders.

A. E. Palmer considered "The Dermatologist, the Older Woman and Cosmetics" and reviewed the changes in the female skin as it ages. The author suggested a number of preparations she considered desirable, including better preparations for the feet and legs, antiperspirants with specific action, including those for the scalp, shampoos that do not stimulate the production of oiliness, lotions for the cold dry skin of the elderly, protection for the face and neck during electric hair drying, skin protective agents against household chemicals.

T.G.A. Papers

At the meeting of the Scientific Section of the Toilet Goods Association, Inc., I. H. Blank, E. Gould and J. L. Jones, Jr. studied the "Penetration of Aluminum Salts into Excized Human Skin". Using abdominal and axillary skin, the authors found that very little of the aluminum salt seemed to be able to penetrate beyond the upper skin layers; this may well be due to the combination of aluminum with skin proteins in the outer portion of the stratum corneum. This would apparently prevent the aluminum salts from having any physiological effect on the sweat glands themselves and the antiperspirant activity must be explained by some other mechanism.

S. M. Peck and I. Kantor considered "Antiseptics versus Antibiotics for the Control of Skin Bacteria" and decided in favor of antiseptics. Topical antibiotics may promote the development of resistant strains of staphylococci; sulfonamides have very low inhibiting power. Hexachlorophene and benzalkonium were effective antibacterials and do not give rise to resistant bacterial terial strains.

M. J. Root, "Pressure Packaging with Nitrogen", pointed out that the products with the proper viscosity range—too thick for bottles, too thin for collapsible tubes—can be made into pressure packs. These include hair dressings, antiperspirant creams, hand lotion, cold and vanishing creams, shampoos and make-up lotions. Nitrogen packages yield products in unaerated form, a decided advantage in many cases.

Sucrose Ester Emulsions

The presence of either sucrose distearate or glyceryl monostearate will decrease the stability of preformed mineral oil-in-water emulsions containing sucrose monostearate according to L. Ossipow et. al. (*Journ. Amer. Oil Chem. Soc.* 35:65, 1958). With adequate concentrations of emulsifier present the emulsion stability of milled emulsions passes through a maximum as the ratio of glyceryl monostearate to sucrose monostearate is increased. The data suggest that this increased stability results from a decrease in droplet size rather than from the formation of a more tenuous interfacial film.

Acetoglycerides

Acetoglycerides, which are defined as being either triglycerides containing two acetyl groups per molecule or diglycerides containing one acetyl group, can be prepared readily by several procedures according to R. B. Alfin-Slater et al. (*J. Am. Oil Chem. Soc.* 35:122, 1958).

The acetoglycerides exhibit unusual physical properties, the unique one of which is their ability to exist as nongreasy, plastic solids. Mixtures of saturated acetoglycerides can be prepared to melt in the temperature range of about 27 to 47°C. while mixtures of unsaturated acetoglycerides can melt as low as −20°C. In other physical properties and most chemical properties the acetoglycerides resemble those of ordinary fats.

Fairly extensive investigations of the physiological behavior of acetoglycerides have been made. It is concluded, from the work reported to date, that acetoglycerides have no deleterious effect on growth or on reproduction and that the mode of digestion of acetooleins and acetostearins does not differ appreciably from that of the corresponding natural fats.

(*Continued from page 37*)

trated on the constant improvement of production methods and newer ways to synthesize the compounds for which there was a strong demand. This work also includes some of the best chemistry yet published on methods for total synthesis of steroids by Sarett. Few of the Merck patents or published articles concern themselves with direct departures from this policy, except where newer compounds represent modifications or by-products of this basic drive. The chemical journals do reveal some excellent work in attempts to isolate and characterize anti-corticoid substances such as aldosterone and the pharmacology journals show evidence of Merck's interest in "anti-aldosterone" compounds. But the weight of evidence indicates that the Merck interest has centered strongly on being the first and best producers of the corticoids. More and better anti-inflammatory steroids can certainly be looked for from Rahway.

Shering—In the case of Schering, of Bloomfield, we find a company that has traveled along a similar path to Merck's with almost an opposite point of view. At the time that cortisone appeared on the scene, no one could have predicted what Schering's role would have been in the future development of cortical hormones. While it was the oldest and most experienced company in the steroid hormone field, Schering had undergone violent upheavals as a result of its seizure by the Alien Property Custodian during the war. During this period of Government ownership, the Schering patents were licensed to all comers and their dominant position in the development and sales of steroid sex hormones was virtually lost. While Francis Brown, President, and Robert Waterman, Vice President, who were guiding this small organization for the Government, could not make free with the limited funds at their disposal, they did not stint on the quantity and quality of Schering's research. E. B. Hershberg, who had been brought down from the Harvard laboratories of Louis Fieser, tackled the cortisone problem with the same intensity that had characterized the earlier work in sex steroids. With a handfull of collaborators, Hershberg whipped out a multitude of syntheses and, in an amazingly short time, Schering announced that it was in the cortisone business. The first Schering cortisone plant was a hand-made, jerrybuilt affair, put together by Hershberg and his staff in the back yard of the old Schering research laboratory, but it did convert desoxycholic acid in cortisone and it also served notice that Schering was a full fledged entrant in the race for cortical hormones. With his limited staff and modest production facilities, the Schering Research Director has continued this policy of full steam ahead to produce more compounds and syntheses per man hour than any one else in the hormone business. In so doing, Hershberg has earned for himself a reputation of being the "do-ingest" chemist in the steroid field. While it may be felt by some that the "Meti" steroids fell into Schering's lap simply because they had the good luck to test these new compounds, it must be remembered that the compounds were available for testing because the Schering research policy calls for constant attack regardless of the size or weight of the problem. The unprecedented financial success which the "Meti" steroids brought to Schering has enabled them to greatly expand their research facilities, especially those for biological screening. But Hershberg can still boast of running the tightest and, for its size, most active research establishment in the business.

Upjohn—Many people like to describe the Upjohn research policies as shrewd, stubborn and thorough. There can be no doubt that Upjohn's success in steroid research derives from the same wisdom that helped build this company from a relatively small Midwestern pharmaceutical firm into a giant within a short space of about 10 years. When cortisone came along, Upjohn was already among the top ten pharmaceutical companies in the world and had already demonstrated great prowess in the manufacture and sales of antibiotics, vitamins and other biologicals. As part of this wisdom, Upjohn made use of the deliberate and patient talents of R. S. Schreiber, formerly of Dupont. Schreiber put his talents to use in assembling a unique set of competitive teams, each of which set out to solve the cortical steroid problem in their own way. In all, a total of seven teams were organized; two for total synthesis, one for modifying jervine, one microbiological, one adrenal brei enzymatic, one bile acid and one joint expedition to Africa in cooperation with S. B. Penick & Co. to look for a source of sarmentogenin.

Upjohn's interest in adrenal cortical hormones was not a recent one since they were, in 1949, the leading producers of natural adrenal cortex extract. Interest in the adrenal extracts had provided Upjohn with some excellent biological know-how developed for the assay of cortical hormones and kept them strongly informed about biological developments in cortical steroid research. When the Hechter and Pincus group at

(*Continued on page 100*)

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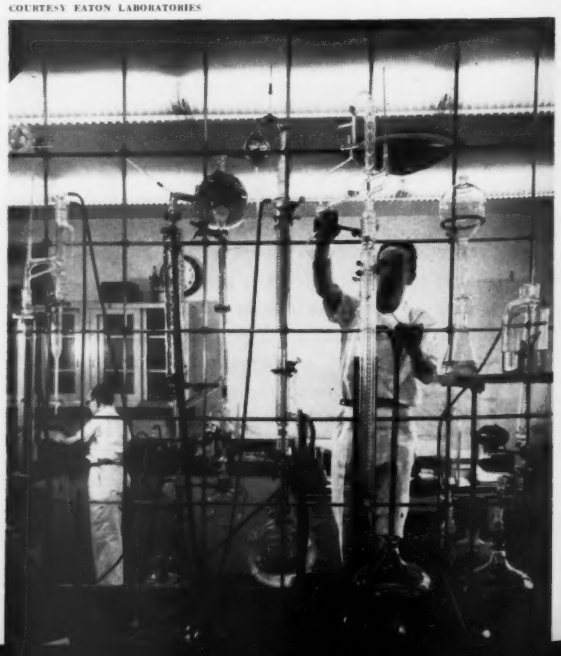

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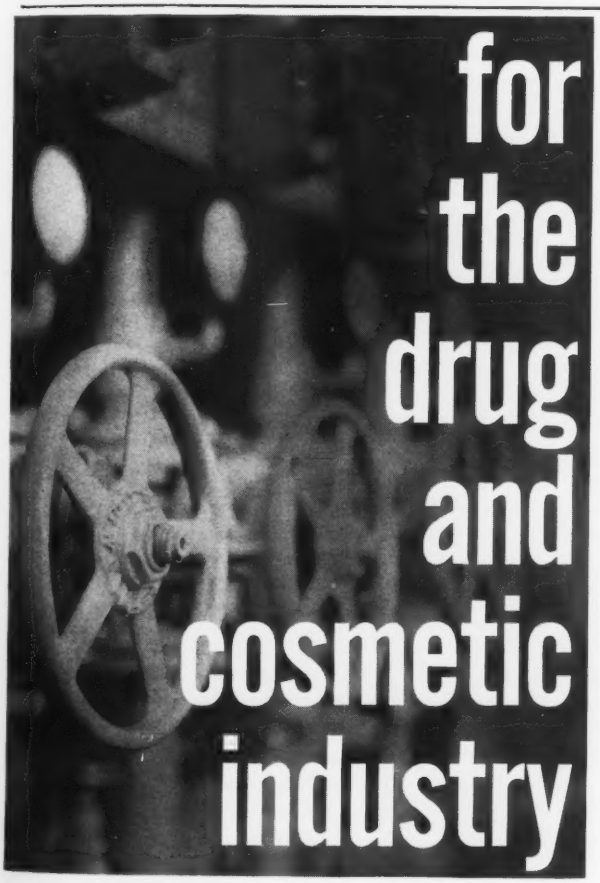

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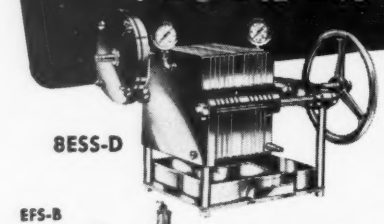

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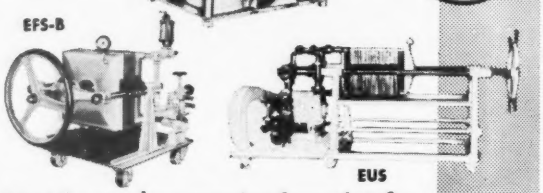

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Industry's Books . . .

The Physical Chemistry of Electrolytic Solutions, *by Herbert S. Harned, Professor of Chemistry, Yale University Emeritus, and Benton B. Owen, Professor Chemistry, Yale University, Third Ed., ACS Monograph Series No. 137, 803 pp., Reinhold Publishing Corp., New York, cloth,* **$20.**

This is a "must" for everyone in fundamental research involving solutions of electrolytes. The thermodynamic treatment has been extended by the addition of a section on irreversible thermodynamics. The statistical theory of simultaneous steady state processes is developed. The principles of irreversible thermodynamics are used to derive the equations for liquid junction potentials. Soret effect and the equilibrium centrifuge. Many new sections make their first appearance in book form. Among them are Mayer's cluster theory; conductance theory with inhomogeneous terms and ion size parameters; new solution of conductance equations applicable to any number of ions; and general theory of the Wien effect. Applications of these theories occur throughout the work. There are also extended treatments of the diffusion of electrolytes and self-diffusion of ions, and of the thermodynamics of two electrolytes in water.

Organic Electrode Processes, *by Milton J. Allen, Director of the Physical Research Laboratories, Ciba Pharmaceutical Products Inc., 174 pp., Reinhold Publishing Corp., New York, (1958), cloth,* **$6.50.**

This monograph provides organic chemists with the principles and practice of the electrochemical method. It enables the novice to obtain a complete picture of the techniques involved, and of the results obtained when investigating by electrochemical means. The book covers basic simplified theory, and the instrumentation and methods used in application. It illustrates type reactions and mechanisms of cathodic and anodic processes. The sifting of data, and the application of principle to practice, are carefully balanced to achieve the greatest practical results for the reader.

The Pentaerythritols, *by Evelyn Berlow, Robert H. Barth, and John E. Snow, Research Dept., Heyden Newport Chemical Corp., American Chemical Society Monograph Series No. 136, 317 pp., Reinhold Publishing Corp., New York, (1958), cloth* **$10.**

This monograph surveys and evaluates the published literature on pentaerythritol, dipentaerythritol, and tripentaerythritol. The preparation of these polyhydric alcohols and the formation, properties and uses of their derivatives are covered in detail. Recent developments in the field of alkyd resins, polyesters, polymeric acetals and ethers of pentaerythritol are emphasized to inform industry of their increasing commercial applications. This is the first unified and dependable discussion of pentaerythritol use in synthetic resins. The book also reveals the unusual properties of pentaerythritol derivatives, and how these compounds are prepared. Industries producing surface coatings, explosives, and fine organic chemicals, as well as those engaged in organic synthesis, will consult this new monograph as a basis for all future applications of the pentaerythritols.

Current Drug Handbook, *by Mary W. Falconer, R.N., M.A., Instructor in Pharmacology, O'Connor Hospital School of Nursing, and H. Robert Patterson, B.S., M.S., Associate Professor of Bacteriology and Biology, O'Connor Hospital, 157 pp., W. B. Saunders Company, Phila., (1958), paper binding,* **$3.25.**

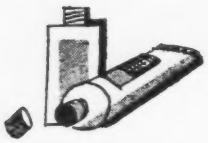
This book contains specific, technical data on approximately 1000 drugs in current use. The format has been planned in tabular form, the material to be read across the page. The first column gives the major names of the drug, secondary names (where such exist), source of the drug, the active principles (if there are any of therapeutic importance), the uses of the drug, toxic symptoms. The second column gives the names of the drug and its official designation. In columns three and four, the dosage and the mode of administration will be found. In the fifth column any other important data is given.

Neomycin—Its Nature and Practical Application, *by Selman A. Waksman, Hubert A. Lechevalier, Burton A. Waisbren, and Robert A. Day, Published for The Institute of Microbiology, Rutgers University by The William & Wilkins Co., Baltimore, 412 pp., (1958), cloth,* **$5.**

In 1953, a preliminary monograph (650) was published summarizing information concerning the formation, isolation, properties, and practical utilization of neomycin. Since then, neomycin has found ever wider use throughout the world. It has proved to be an ideal agent in combination with other antibiotics and hormones in the treatment of many infections. New organisms capable of producing neomycin or neomycin-like substances were soon isolated, and new methods of production and isolation were developed. This accumulated information necessitated the preparation of a new and more comprehensive volume on neomycin. This is not to be considered as a second edition of the earlier work, although some of the information presented previously has been included. Whereas the earlier monograph summarized primarily the work done in the Department of Microbiology of Rutgers University, with but few additional outside contributions, the present volume is a result of the cooperative effort of a large number of investigators and clinicians from many different laboratories. An attempt has been made to present a comprehensive summary of the nature and utilization of neomycin and to assemble a complete bibliography.

Blue Book—1958-59, *702 pp., American Druggist Blue Book, New York, paper binding,* **$9.**

Published on February 26th, the new 1958-59 American Druggist Blue Book contains 73,386 price changes and lists a total of 169,215 products. Features include complete descriptions—including composition, action, uses, dosage, and packaging—of over 1,300 different products. It also includes reference articles on Latin words and phrases: botanical synonyms; proper methods of storing chamicals; baby products check list; chemicals used against animal parasites. In addition, about 7,200 manufacturers are included in an alphabetical index.



Advancing Therapy

Juvenile Hormone

Progress in the purification and chemical identification of an insect hormone which may furnish a vital key to the nature and control of the aging process is reported by a team headed by Prof. Carroll M. Williams of Harvard.

The hormone is officially known as the "juvenile hormone," and more popularly as the "Peter Pan hormone." It is secreted by two tiny glands, in the brains of metomorphosing insects during the larval stage. When the caterpillar reaches maturity, the glands stop producing the hormone and the caterpillar goes on to develop into a pupa and then into an adult winged moth.

When the glands of an immature caterpillar are transplanted into a maturing one, the process of metamorphosis is stopped and the caterpillar continues to grow as a caterpillar. On the other hand, when the glands are removed before the caterpillar reaches maturity, the caterpillar stage is cut short, and the insect develops into a midget adult moth ahead of its normal time.

The juvenile hormone was first discovered in 1936 by the British biologist, V. B. Wigglesworth, at Cambridge University, but it took more than twenty years before it could be concentrated in an extract. Its first successful isolation was achieved in 1956 by Professor Williams and his associates. The hormone is definitely not a substance that can reverse time. In other words, it is not a rejuvenation hormone.

What it does do, however, at least in all metamorphosing insects, is to stop time. "The presence of this hormone exerts a biochemical restraint on the cellular transformations responsible for the metamorphosis of the insect as a whole." A mature caterpillar given this hormone will continue to grow; but only as a caterpillar.

The concentrated extract appeared as a golden-yellow, non-toxic oil of low viscosity. The best preparations are active at one part of hormone per million parts of insect.

The studies have progressed to the point where it appears likely that the chemical structure of the hormone will soon become known, and this, it is expected, will lead to its synthetic production. Whether it will serve the same function in higher animals, including man, is, of course, still unknown. But whether it does or not, science will have found a powerful new tool for studying the aging process in all living things, low and high.

"From the standpoint of pure science," Professor Williams states, "there seems little doubt that the juvenile hormone has much to tell us about the chemical engineering of growth. Here is an agent which somehow imposes a biochemical restraint on growing up without interfering with growth as such. It represents, at the insect level, a 'Peter Pan hormone.'

"Can there be such a thing in higher forms? Can we look forward to a chemotherapy for aging and senescence? Perhaps the juvenile hormone of insects may encourage a fresh look at this possibility." W. L. Laurence, *The New York Times.*

Comment: The extrapolation from insects to higher life forms is risky, but intriguing. The alchemists' "Elixir of Life" may actually exist for insects; the newspaper story does not say whether insects maintained under the influence of the juvenile hormone have a longer life span. Will the hormone administered to a young adult insect prevent aging or is the hormone concerned only with the highly specialized metamorphosis? I wonder if royal jelly does not serve a similar specialized function in the metamorphosis of bees? Any speculation concerning the action of this insect juvenile hormone on animals, including human beings, can at present be only an exercize in science fiction. Professor Williams' future work certainly deserves the closest attention.

Deaner Anti-Depressant

Clinical trials of a new anti-depressant drug, Deaner, have indicated that it can contribute to much better overall social adaptation and scholastic functioning by children with behavior problems, according to Dr. Leon Oettinger, Jr., of the Department of Electroencephalography, St. Luke's Hospital, Pasadena, Calif. in a paper presented before the American Encephalographic Society.

The new drug is manufactured and distributed by Riker Laboratories, Inc., of Los Angeles for use largely in the treatment of chronic fatigue, minor depression and chronic headaches. It is the paraacetaminobenzoic acid salt of dimethylaminoethanol, available only on prescription.

Private patients selected for treatment with Deaner in Dr. Oettinger's trials included 108 children, ranging in age from six months to 20 years.

All the children had behavior problems severe enough to make them socially unacceptable. The greater number were overactive, overirritable, had a short attention span, and were doing porly scholastically—performing at a level below that expected of them based on intelligence tests. As a group they were emotionally unstable, unpredictable and unadaptable.

In 68 per cent of the group, the

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U.S.I. CHEMICAL NEWS

July ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1958

Urethan Applications Grow In Drug, Chemical Fields

Ethyl carbamate, more commonly known as Urethan, has become a useful chemical tool with a wide variety of uses since it was first produced in this country over 20 years ago. Urethan's applications now range from cancer therapy to the manufacture of plasticizers — and useful new reactions are continually being found.

In the pharmaceutical field, Urethan is now employed in the production of tranquilizers, and in the synthesis of many drugs. Its medical applications include the treatment of leukemia and other forms of cancer. Urethan is a mild hypnotic and sedative; is also reported to enhance the effectiveness of penicillin and streptomycin, and to increase the activity of certain enzymes.

Plasticizer producers use Urethan as a gelatinizing agent for cellulose acetate and cellulose nitrate. Cosmetic makers find it an excellent solvent in astringent preparations and hair dyes. Diazo paper manufacturers incorporate it into the light-sensitive layer to yield bright, stable prints.

Urethan is the ethyl ester of carbamic acid and has the chemical formula

$$H_2N-\overset{\overset{O}{\|}}{C}-O-C_2H_5$$

As a chemical intermediate, it reacts with many organic and inorganic compounds to form end products or other intermediates of commercial importance in the dyestuffs, plasticizer, food and drug fields among others.

U.S.I., pioneer producer of Urethan, has a wealth of experience with this wide-spectrum chemical, and can supply information or technical help on applications and reactions.

Polyethylene Closures for Drums Now Self-Venting

Used on U.S.I. Alcohol Drums

A leak-proof, tamper-proof, all-polyethylene closure for containers carrying liquids—tradenamed FlexSpout* — now has a self-venting feature which eliminates the need for other separate vents on shipping containers. The improved spout

MORE

*® Rieke Metal Products, Auburn, Ind.

Self Venting FlexSpout on U.S.I. Pure Ethyl Alcohol, USP, 5-gallon drum being pulled up into pouring position via new bail on reseal cap.

Promising New Sodium Treatment Developed for Bonding Teflon

Sodium-Naphthalene-Solvent Treatment Claimed More Convenient Than Earlier Teflon Preparation for Strong Bonding to Metals, Rubber and Plastics

A new surface treatment has been developed for joining fluorinated resins such as Teflon to other materials. The resulting ease of bonding will undoubtedly increase Teflon utilization as a corrosion-resistant lining for process equipment and vessels, as a bearing material, and in fluid seals.

The new process, described in U.S. Patent 2,809,130, requires only conventional ventilation, and uses treating solutions that can be stored for long periods. Its advantages over the sodium-ammonia solution surface treatment should bring the new process into wide application for preparing Teflon for adhesion to metals, rubber and plastics.

Bond Strengths Are High

It is reported in the patent that peel tests were made on an epoxy cement bond between the treated Teflon and a phenol-formaldehyde resin — and that the bond was stronger than the Teflon itself. Similar results were obtained in joining Teflon to metal and rubber with a chlorinated rubber adhesive.

How It Is Done

The Teflon surface is bathed at room temperature with a sodium-naphthalene complex dissolved in a solvent such as dimethyl glycol ether. When the surface turns a grey-brown, it is ready for bonding to other materials. A wide variety of common adhesives can be used, including chlorinated rubber types, resorcinol formaldehyde cements, phenolic types, and epoxies.

Preparation of Treating Solutions

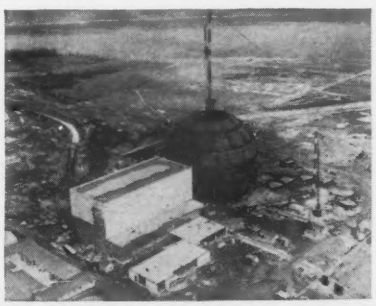
The patent gives a specific example of solution preparation as follows: a liter of a molal solution of naphthalene in a dimethyl glycol ether solvent under a nitrogen blanket is

MORE

Largest All-Nuclear Power Plant to Contain 44 Miles Of Zirconium Tubing

At Dresden, Illinois, a 180,000 KW all-nuclear power station is being constructed which will contain in its reactor core almost 44 miles of tubing made from zirconium. This Commonwealth Edison boiling water reactor plant will be the largest all-nuclear station in the U.S. when it begins operation in mid-1960.

The tubing is made of reactor-grade Zircaloy-2 and is used as a container for UO_2 fuel pellets. It is to be given special pressure, sonic and corrosion tests, to insure that it meets the rigid tolerances established for this type of tubing.



Sphere to house reactor, and turbine building, for Commonwealth Edison's Dresden, Ill., power plant — to be country's largest all-nuclear station when completed in 1960. Reactor will contain 44 miles of zirconium tubing. (photo courtesy General Electric)

Zirconium metal has an extremely low nuclear cross-section — allowing free passage of neutrons—and makes an ideal cladding material for uranium because it offers minimum interference to the fission process, is corrosion and heat resistant, and structurally strong.

This zirconium tubing order, the largest ever placed, is being processed by Mallory-Sharon Metals Corporation (owned ⅓ by U.S.I.), world's largest producer of special metals such as titanium, hafnium, zirconium, tantalum and columbium. The company uses a U.S.I. sodium reduction manufacturing process which offers advantages in both economy and product quality.

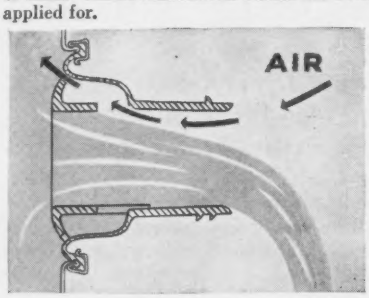
Another ISOSEBACIC® *Acid Patent for U.S.I.*

U.S. Patent No. 2,822,389 on the separation of C-10 dicarboxylic acids has been granted to U.S.I. It is the ninth patent U.S.I. has obtained on its manufacturing process for ISOSEBACIC acid — a new intermediate for the plastics industry. The material is a mixture of three C-10 dibasic acids — 2-ethylsuberic acid, and 2,5-diethyladipic acid, and sebacic acid.

A plant to produce ISOSEBACIC acid in commercial quantity is now being completed at U.S.I.'s major chemical complex in Tuscola, Illinois. Potential applications of the new intermediate include the manufacture of plasticizers, ester lubricants, alkyds, polyamides, polyurethanes, reinforced plastics and in chemical synthesis.

CONTINUED *Polyethylene Closures*

also eliminates liquid surge or "glug" in pouring. It is claimed that there is no waste or spillage, since the closure will vent in any pouring position, and a controlled flow—large or small—can be maintained. Patent has been applied for.



Cross-section of Self Venting FlexSpout closure.

The new FlexSpout, like the old, is normally recessed during shipping and storage and can be extended for pouring. Addition of a bail to the polyethylene cap, however, makes it easy to pull the spout up into pouring position.

This improved closure will soon be on all 5-gallon containers in which U.S.I. ethyl alcohol is shipped. It offers greater convenience in handling and pouring.

CONTINUED *Teflon*

reacted with metallic sodium. Formation of the sodium-naphthalene complex is indicated by the appearance of a greenish color, at which point the Teflon is immersed.

Other investigators have cited the use of finely divided sodium dispersed in xylene or white oil. Preparation and handling are described in a U.S.I. brochure, "Sodium Dispersions" which may be obtained on request.

Those who will be employing metallic sodium for the first time when applying this treatment will find valuable information in U.S.I.'s 40-page book, "Handling Metallic Sodium on a Plant Scale." The book is available from U.S.I. without charge.

Cabot's Extrafine Silica Now Made at Tuscola, Ill.

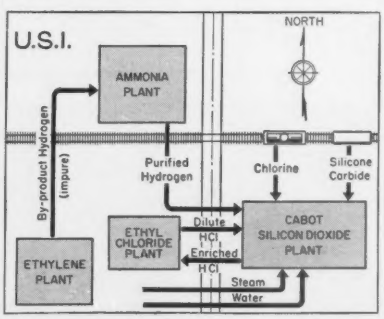
New Plant is Integrated with U.S.I. Production Facilities

A five million pound per year plant for the production of finely-divided silicon dioxide is now onstream at Tuscola, Illinois. Godfrey L. Cabot, Inc. has been importing the product, Cab-O-Sil*, from Germany since 1952. The new Cabot plant is the first in this country to make silica by the German process.

Cab-O-Sil's unique properties are said to derive from this method of manufacture which involves the vapor-phase hydrolysis of silicon tetrachloride in a hot hydrogen environment. The silicon dioxide produced has a particle diameter of 15-20 millimicrons, surface area of 175-200 square meters per gram, purity of 99-99.7%. It has found application in reinforcing rubber polymers, producing stable lubricating greases, coating reproduction papers, adjusting viscosity of paints and inks, and controlling flow properties of a wide variety of industrial powders and liquids.

Cabot chose Tuscola as a plant site because of its economic advantages. Located near U.S.I.'s ammonia and ethyl chloride facilities, the new Cabot plant utilizes raw materials supplied by the U.S.I. processing units, and the U.S.I. ethyl chloride plant uses byproduct hydrogen chloride from Cabot.

*®Godfrey L. Cabot, Inc.



Flowsheet showing interrelation of U.S.I. and Cabot plants at Tuscola, Illinois.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Glass acid bulbs for accurate quantitative analysis of fuming acids, toxic or volatile chemicals, etc., can now be purchased in commercial quantity. They are said to be of controlled diameter, weight, uniformity of wall thickness; can be made in any desired size. **No. 1370**

Portable kit for field testing of non-fat milk solids is now available. Permits quick determination of solids content before milk goes to dairy. Consists of portable water bath, milk sample tubes, lactometers; weighs 40 lbs. **No. 1371**

Antibacterial compound just developed is claimed nontoxic, nonirritating, noncorrosive, odorless, tasteless, water soluble. This complex silver compound is suggested for liquid soaps, toilet goods, other similar products. **No. 1372**

New pump eliminates contact of moving parts with fluid handled. Intake and outlet consists of one flexible tube passing through pump body and acted upon by kneading action of double rotor. Handles corrosives and abrasives. **No. 1373**

Molybdenum pentachloride — active catalyst for chlorinating aromatics, Friedel-Crafts alkylations and like reactions — can now be obtained in semiworks quantities. Also "plates" molybdenum when reduced by hydrogen. **No. 1374**

New needle-and-glass syringe combination packed in sterile polyethylene bag is now available. Entire unit is designed to be discarded after use. Glass barrel unaffected by solvents during long contact with parenteral fluids. **No. 1375**

All phases of the flexographic printing process are covered in a new, revised, updated edition of an older book. Now on sale, new volume includes sections on copy preparation and halftone printing by flexography. **No. 1376**

New centrifugal filming machine for sterilizing sensitive biological fluids and producing high-potency vaccines by ultraviolet irradiation now in production. Suggested for polio vaccines, blood plasma, liquid foods. **No. 1377**

Fiber glass finishing agent which establishes a better bond between fibers and resins is now available in semiworks quantity. Reported to give better wet and dry strengths to polyester, epoxy, melamine, phenolic laminates. **No. 1378**

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new agent proved beneficial, in that the children began to act in more socially accepted patterns and learning in school improved.

All patients previously had responded poorly to treatment with at least one other therapeutic agent and most had responded poorly to several, or had developed toxic symptoms which had caused their medication to be discontinued.

"Of great importance to the child in school is the freedom with Deaner therapy from the drowsiness, decreased attention span and increased reaction time found with reserpine and phenothiazine therapy."

Meprobamate Habituation

A "double-blind" study was conducted by T. M. Haizlip and J. E. Ewing (N.E.J. Med. 258:1181, 1958) with three groups of 25 patients receiving respectively identical placebos or very large doses of meprobamate. Clinical observations revealed severe sedative effects during the first three days, 35 patients out of 47 showing staggering gait or inability to stand or walk without falling.

At the end of forty days all patients were switched surreptitiously to placebo. Clinical observation revealed objective evidence of an abstinence syndrome in 44 out of 47 patients who were previously on meprobamate. The typical withdrawal syndrome included various degrees of insomnia, vomiting, tremors, muscle twitching, overt anxiety, anorexia and ataxia. Eight patients showed a picture of hallucinosis with marked anxiety and tremors much resembling delirium tremens. In 3 patients grand-mal seizures developed.

The effects and the withdrawal syndrome of meprobamate at both dose levels were statistically significant as compared with placebo in this study.

Cardiac Arrhythmias Treatment

Seventy-three arrhythmias occurring in 64 patients were treated by Z. L. Burrell, Jr. and A. C. Martinez (*N. E. Journ. Med.* 258: 798, 1958) with chloroquine and hydroxychloroquine, 50 of the arrhythmias responding favorably with restoration of sinus rhythm. Thirty-eight of 55 responded favorably to chloroquine, and 12 of 18 to hydroxychloroquine.

Side effects were somewhat limited and generally less pronounced than the usually reported experience with quinidine.

Chloroquine was used in a larger number of patients than hydroxychloroquine: however, there appeared to be no difference in the therapeutic effectiveness of the two agents. Hydroxychloroquine appeared to be somewhat better tolerated so far as gastrointestinal side effects were concerned.

The dosage of chloroquine and hydroxychloroquine used in the treatment of cardiac arrhythmias as described in this study is considerably greater than that recommended for other indications.

The authors believe that these agents are effective in the treatment of cardiac arrhythmias and that their effectiveness and high rate of tolerance warrant additional investigation of their use in these situations.

TB Prophylaxis

A drug that promises to protect man from developing tuberculosis instead of helping to cure the disease after it appears has been synthesized at the Irish Medical Research Council, Trinity College, Dublin, Ireland.

The drug, still known by the laboratory label B663, has been shown in experiments with animals to be more effective against the tubercle bacillus than any other anti-tuberculosis agent in present-day use, Dr. Vincent Barry, director of the Council, reported.

Compound B663 is a member of the phenazine family of dark red dyes. It is completely non-toxic for the animals investigated.

A group of mice was given small amounts of the drug for some weeks and then injected with a lethal dose of virulent tubercle bacteria. A second group of mice which had not received any drugs were inoculated in the same way.

On the average, the untreated animals died in two weeks. All the treated mice were still alive four months later.

If this principle is applied to man, the new drug holds out the possibility of being able to protect persons susceptible to TB against exposure to the natural infection.

—*Science News Letter*

Nostyn (Ames) is a new "calmative" agent, 2-ethyl-cis-crotonylurea, claimed to be non-habit forming and of very low toxicity.

Meprospan (Wallace) is a prolonged release capsule form of meprobamate. Each capsule contains 200 mg. of meprobamate in the form of coated pellets which release the drug continuously for 10 or 12 hours. The product is available as bottles of 30 capsules.

Tessalon (Ciba) is a new nonnarcotic cough medication said to be two and one-half times as effective as codeine; it inhibits the cough reflex in the sensory nerves of the lungs and in the medulla of the brain. The drug is nonhabituating and nonaddicting and no tolerance or allergy has yet been reported. It is available as 100 mg. perles in bottles of 100.

Varidase Buccal (Lederle) is a mint flavored tablet containing 10,000 units of streptokinase which allowed to dissolve in the mouth and is absorbed into the body through the mucous membrane. The package is a bottle of 24 tablets.

Peritrate with Nitroglycerin (Warner-Chilcott) is an uncoated, sublingual combination of 10 mg. pentaerythritol tetranitrate with 0.3 mg. of nitroglycerin. It is available in bottles of 50 tablets.

Paraflex (McNeil) is a skeletal muscle relaxant, 5-chlorobenzoxazolinone, available as 250 mg. scored tablets in bottles of 50.

Plaquenil Sulfate (Winthrop) tablets contain 200 mg. of hydroxychloroquine sulfate and are being used in the treatment of acute or chronic rheumatoid arthritis. Pharmacologically, Plaquenil has approximately one-fifth the acute toxicity of chloroquine. The tablets are available in bottles of 100.

Sernyl (Parke, Davis) is 1-(1-phenylcyclohexyl) piperidine monohydrochloride, a non-depressant, rapid-acting injectable anesthetic. Sernyl does not depress respiration or circulation and is adequate for superficial surgery. In combination with relaxing drugs it can be used in major surgery.

Tussaminic (Smith-Dorsey) provides prolonged relief from cough. Each timed-release tablet contains 50 mg. phenylpropanolamine hydrochloride, 25 mg. pyrilamine maleate, 25 mg. pheniramine maleate, 30 mg. dextromethorphan hydrobromide and 300 mg. terpin hydrate. The preparation is supplied in bottles of 50 tablets.

(*Continued from page 94*)

the Worcester Foundation for Experimental Biology demonstrated that non-oxygenated steroids such as progesterone, desoxycorticosterone and Compound "S" could be hydroxylated in the 11 position by perfusion through adrenal glands, the Upjohn research staff decided to gamble on biological technics to overtake their competitors. The group, led by William Haines, studying the enzymatic conversions of steroids produced by adrenal brei developed ingenious technics for separating the newly formed steroids and characterizing them on a mass scale. The microbiologic group developed the steroid paper chromatography technic of Zaffaroni to a fine art and even produced a "mechanical chemist" which automatically analyzed and separated the eluates from adsorption chromatography. While biological hydroxylations were being performed and analyzed by Haines, the microbiologic group under Murray and Peterson set out to find enzymes elsewhere in nature which could be harnessed for this task on a commercial basis.

With hindsight it may be said that this was good reasoning. If enzymes for hydroxylation of steroids existed in the mammalian adrenal gland, it might be assumed that such enzymes existed elsewhere in nature. Since we have learned to cultivate and harvest the biochemical products of molds, yeast and bacteria on an industrial scale, one could look ahead and say that if such enzymes were found, a commercial process could be achieved. But what were the chances of finding such highly select enzymes in the world of microorganisms? True, Mamoli and Vercellone had shown that some yeasts and bacteria could oxidize hydroxyl groups and some could reduce carbonyl groups, but these oxygen functions were already present in the steroid molecule. Almost nothing was known about the steroid metabolism of fungi and what was known offered very little hope that hydroxylation mechanisms existed which would attack the steroid molecule at the 11 position and not at other positions. Nevertheless, this is what at least one of the research teams at Upjohn though might be possible and obviously they had the combined talents to prove it. As it turned out, an agar plate exposed on a window sill in Kalamazoo yielded a specimen of the genus Rhizopus which dutifully converted progesterone to 11α-hydroxyprogesterone. Maybe this was fantastic luck, but it was more than luck that enabled Upjohn to harness this reaction on a commercial scale and work out the additional chemical steps to covert their hydroxylated progesterone to cortisone. Again with hindsight it might be said: of course, the hydroxylation would take place at the 11 position. If this was the position most vulnerable to attack by mammalian adrenal enzymes, then it would be the one most readily attacked by fungal enzymes. Luck or no luck, the microbiologic process for cortical steroid production was the outcome of the foresight and teamwork of Upjohn research.

Assured that it had a good system for doing research, Upjohn has kept its research teams going on a wide variety of problems in the steroid field. Continued research has yielded hundreds of steroid analogs, both via fermentation and chemical manipulation. Improved cortical steroids, androgens, anabolic agents and aldosterone-type substances have already resulted. Anti-hormones and anti-cancer compounds are being screened in tisue culture, animal tumors and human malignancies and, as regards production, competitive teams with alternate starting materials and alternate processes to make sure that the steroids which Upjohn must mass produce will be turned out in an optimum fashion.

Squibb—If the possibility for 11-hydroxylation by microorganisms was considered a slim hope at Upjohn, it was not so slim that the idea did not also occur independently to research workers at Squibb. Josef Fried who, in the early days of the search for cortisone starting materials had, together with Oscar Wintersteiner, explored the possibility that jervine, an abundantly available veratrum alkaloid, might possess an 11-keto group, had the blessings of his management when he took them into this line of research. Later he was able to show that jervine did indeed possess an 11-keto group, but unfortunately in a five-membered C ring. Fried then turned his group to microbiologic investigations which resulted in a process for the direct conversion of Compound "S" to hydrocortisone. This work also yielded a highly efficient Epi-F process for Compound "S" and also resulted in the first published account of hydroxylation in the 16α position, now of significance in the synthesis of triamcinolone.

While Upjohn's priority in this field cannot be disputed, particularly because of their early translation of laboratory results into commercial production, the excellent chemical contributions of Fried and his group proved of inestimable value to Squibb and to the other companies in the steroid field. In a novel process for converting Epi-F to hydrocortisone, Fried prepared a 9β-11β-epoxide and then opened this with hydrogen fluoride, yielding 9-fluorohydrocortisone. To everyone's surprise, this compound proved to be far more potent than hydrocortisone and was indeed the first demonstration that the natural compounds could be improved upon. Unfortunately, the 9-fluoro group greatly increased the salt retaining properties of hydrocortisone which caused many to overlook the importance of this new find. Fluorohydrocortisone has found wide application in topical preparations, since it is more effective and less expensive per dose than hydrocortisone.

Further halogenations by Fried at positions 12 and 21 have yielded other important compounds which have enhanced corticoid, progestational and anti-

(*Continued on page 104*)

Trade Literature

Vitamin B_{12}

The Chemical Division of Merck & Co., Rahway, N. J., has issued a new Merck Service Bulletin on Vitamin B_{12}. This is a 193-page, cloth cover bound book containing comprehensive, up-to-date information on vitamin B_{12}. The book contains chemical, pharmaceutical, and analytical information; nutritional, metabolic, physiologic, pharmacologic, and clinical information; and a selected annotated bibliography of more than 300 abstracts of selected material appearing in the medicinal and related scientific literature since July 1953.

Celon Bands and Caps

The Celon Company, Muscatine, Iowa, has issued a 12-page illustrated brochure describing the manufacture of Celon cellulose bands and caps, and explaining styles, finishes, colors, printing possibilities, and how the seals are properly applied. Twenty different ways in which Celon seals can be used to enhance merchandising and add protection to packages are illustrated.

Pharmaceutical Marketing

Pharmaceutical Marketing, a 200-page book containing condensations of the lectures presented at the Second Pharmaceutical Orientation Seminar, has been published under the joint sponsorship of the Pharmaceutical Club of New York and Rutgers University College of Pharmacy. The book contains sumaries of 16 lectures covering the pharmaceutical industry, clinical and pharmaceutical research, product development, production methods, market analysis, test marketing, sales management, sales promotion, advertising and professional, trade and public relations. The book is obtainable at $5 from P.A.C., 489 Fifth Avenue, New York 17.

Polyethylene in Packaging

U. S. Industrial Chemical Co., 99 Park Avenue, New York 16, has issued a 16-page booklet on polyethylene packaging. The book points out how the unique properties of polyethylene make it an ideal packaging material for a wide variety of consumer and industrial products.

Aerosol Propellant Slide Rule

General Chemical Division, Allied Chemical Corporation, 40 Rector Street, New York 6, has released a handy Genetron aerosol propellant slide rule which is being distributed to contract and other fillers. The pocket-size rule contains vapor pressures at 70°F. of any percentage mixture of the company's Genetron 12—Genetron 11 propellant mixes. Printed in blue and white with percentages and vapor pressures in red for easy readibility, the slide rule is particularly useful in laboratories where data in determining proper mixtures of Genetron propellants are desired.

Vinylpyrrolidone

A 25-page brochure on the applications of vinylpyrrolidone profusely illustrated with technical tables and charts is being made available by Antara Chemicals, a sales division of General Aniline and Film Corporation, 435 Hudson Street, New York 14. The brochure details copylymerization of vinylpyrrolidone with other monomers for a wide variety of products, including cosmetics.

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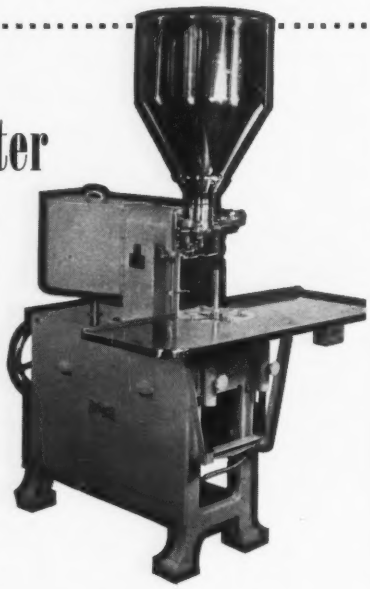

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Skin Research

Sebaceous Gland Secretion

A. M. Kligman and W. B. Shelley (*J. Invest. Dermatol.* p. 99, 1958) describe experiments which negate the concept that the surface lipids control the output of sebum by the sebaceous gland; instead, the thesis they defend is that the sebaceous gland functions continuously, without regard to what is on the surface. The major quantity of sebum on the forehead is produced by a unique type of pilosebaceous unit which is essentially a huge gland with a rudimentary hair; the sebum which issues from these sebaceous follicles is clear and fluid, resembling sweat. Droplets of preformed sebum can be expressed by strong compression. The muscles of piloerection are unable to propel sebum to the surface. The quantitative estimation of the amount of sebum delivered to the surface requires complete immobilization of the subject and complete isolation and protection of the test site.

The stratum corneum is visualized as a wick which attracts sebum out of the follicular reservoir by capillary action. This hypothesis would account for the greater quantity of lipid that can be collected during a given time interval with repeated as compared with single removals. Controlled experiments did not support the belief that sweating promotes the delivery of sebum and emotions were not found to influence the output of the sebaceous glands.

Freckles and Tyrosinase

Observations on the tyrosine reaction in freckled human epidermis by A. S. Breathnach (*J. Invest. Dermatol.* p. 153, 1958) indicates that there is a direct correlation between the tyrosinase activity of individual melanocytes with exogenous tyrosine, and the amount of preformed melanin in a given area of epidermis. Capacity for melanogenesis would also appear to be correlated with the size and density of distribution of pigment cells in this material, and it is suggested that these properties probably apply to human melanocytes in general.

Differences in the tyrosinase activities of the melanocytes of freckle and paler epidermis which are evident on incubation with tyrosine, are not abolished by the provision of an excess of copper in the substrate medium. This consideration, and certain others relating to the natural features of the phenomenon of freckling, strongly suggests that the localization of individual freckles cannot be accounted for in terms of local differences in the concentration of epidermal sulfhydryls affecting availability of copper for the enzyme tyrosinase.

Human melanocytes show no reaction on incubation with either L-tryptophane, or 5-hydroxytryptophane.

Methoxypsoralen and Suntanning

A double-blind controlled study by F. Daniels, Jr., C. E. Hopkins and T. B. Fitzpatrick (*A.M.A. Arch. Dermatol.* 77:503, 1958) of reactions of 106 patients while using methoxsalen (8-methoxypsoralen) (10 or 20 mg.) and an identical placebo failed to show that these patients could discriminate between lactose placebos and methoxsalen as to their sunburning and tanning effect.

A significant relationship was found between the patient's statements of his usual tendency to sunburn and his claimed protection from sunburn while using the blind placebo.

Since methoxsalen is a known potent photodynamic agent, the point of this study is not that patients are reacting falsely to an inactive agent but that the testimonial type of data has a high inherent error. Use of a higher dose of the active drug might have led to better separation of the drug and placebo groups, but the high placebo reaction rate cautions that, even with a very definite therapeutic effect of the drug, this could not be confidently detected without a blind trial.

Dermal-Epidermal Junction

The subepidermal basement membrane in man has similar properties to other subepithelial and subendothelial basement membranes and is microanatomically and histochemically distinct from the subepidermal reticulin layer. It is attached to the dermal elastic plexus by numerous very delicate connecting fibers, which have similar staining properties to the sheaths of ordinary elastic fibers. Each connecting fiber joins the membrane at the apex of a basal epidermal cell process.

This arrangement, according to J. H. Cooper (*A.M.A. Arch. Dermatol* 77:18, 1958) explains dermal-epidermal adhesion more satisfactorily than the older concept of an interlocking between the basal epidermal cell processes and the interdigitations of subepidermal reticulin, for it is now evident that reticulin is a plastic mixture of amorphous substance and disaggregated collagen, which in the sub-epidermal region will function merely as a kind of shock-absorber zone between the basement membrane and cells above and the mature dermal collagen below.

Virac (Ruson) is a complex of iodine and a cationic detergent, said to be a non-toxic, non-irritating germicide, and is available as a 1:500 aqueous solution.

(*Continued from page 100*)

cancer activity. With these achievements to its credit, the Squibb management now seems to regard its investment in steroid research as a sound one. Their entry into the oral corticoid market, jointly with Lederle, to exploit triamcinolone, would seem to attest to this fact. Also, the recent announcement of a two-step microbiological process for 9α-fluorohydrocortisone seems to provide them with enough of an advantage to enable them to safely step into commercial production of corticoids.

Lederle—In a more modest way, Lederle has been keeping its foot in the door of steroid research by supporting the research of Seymour Bernstein and his small group. Although one of the strong forces in the antibiotic fermentation field, Lederle has adhered strictly to the policy of searching for a new compound which could be exclusively theirs before undertaking any large scale expenditures for production facilities. Bernstein's group has turned out an excellent series of papers on steroid analogs. They were also the first to show that 16α-hydroxylation of 9-fluorohydrocortisone and 9-fluoroprednisolone served to nullify their salt retaining properties while at the same time preserving their strong glucocorticoid activity. Thus they were able to make use not only of the greater potency provided by the 9-fluoro group, but also to create in triamcinolone (9-fluoro-16α-hydroxy prednisolone) an anti-inflammatory corticoid which is virtually free of the undesirable side effect of salt retention.

As Lederle and Squibb jointly enter the cortical steroid market with triamcinolone, their basic production tasks are being handled by one of their competitors. But, if they are successful in their bid for their share of the cortical steroid market, both organizations have by now a sufficient stock of know-how to permit them to move into large scale production of their new steroid and the ones which are to follow.

Syntex—If success in steroid research must depend upon the fortuitous combination of opportunity and ability, then it can be said that Syntex has had more than its share. Starting with the fundamental developments of its cofounder Russell Marker, Syntex set out to produce steroids in what was technologically a backward area of the world. When young George Rosenkranz took over the technical direction of Syntex, he was able to harness these primitive technics and lift Syntex virtually by its bootstraps to the status of a modern industrial organization and one of the most powerful forces in the steroid industry. This was accomplished not only because Rosenkranz was fully able to exploit the advantages of the Mexican raw material availability, but also because the necessity to do continuous research in steroids was always uppermost in his mind. Rosenkranz pursued this goal in a most remarkable fashion. He was able to get his company to turn more of its earnings back into research than has any other company in the business, but Rosenkranz has shown an even greater skill, that of using his research money to buy the best talent available and make it go the farthest. To help spend its research dollars wisely, Syntex had the luck to employ the services of Carl Djerassi, who is easily acknowledged to be the most brilliant youngster ever to have come into the steroid industry.

In a whirlwind of activity, Djerassi and Rosenkranz seem to have set off in all directions simultaneously. Despite the difficulty of accomplishing research results in Mexico, Syntex has published more in the steroid field since 1950 than any other company in the world. Consequently, it has contributed more than its share to the common scientific pool of steroid knowledge. At first, the publications reflected Syntex' interest in utilizing diosgenin as a source material for cortical steroids via chemical means for adding the oxygen at the 11 position. This work by Syntex, as well as the efforts by Merck, Glaxo, and other British and Swiss groups, appeared simultaneously and represent some of the most erudite accomplishments in steroid chemistry. These efforts would probably have ended in industrial processes, were it not for the Upjohn microbiological discovery which came less than a year afterwards.

The idea that steroid homologs might also prove to have advantages over the natural hormones seems to have been firmly rooted in the minds of the Syntex research group very early in the game. Djerassi turned out numerous compounds which were the unnatural isomers of the known hormones and their metabolites and some of these showed promise which was to be realized in the future, that of separating the primary hormonal activities from the secondary properties which might prove of therapeutic importance. The crowning achievement in this direction was the discovery by Djerassi of the 19-nor series wherein he produced molecules identical with progesterone, DOC and analogs of the natural hormones, but lacking the 19-methyl group. These compounds were found to have markedly enhanced activities and pointed the way to "super-hormones", in the sex steroid series.

Important new discoveries are never really stumbled upon. They are more likely to stub the toe of someone who is actively searching in the underbrush. Djerassi's activities have always been characterized by his restlessness in exploring the unknown. In following up his work on the "unnatural" or allo series of steroids, Djerassi devised methods for converting these to the natural series so that some of the odd compounds found in nature could be put to good use. In his work aimed at converting hecogenin, and tigogenin to known steroid hormones, he produced dozens of new compounds having double bonds in various positions that are not found in nature. Some of these had double bonds between positions 1 and 2 and proved to be the forerunners of the "Meti" steroids giving Syntex, years later, some claims to a patent position for prednisone and prednisolene. The fruitful activity of the Syntex research group has already

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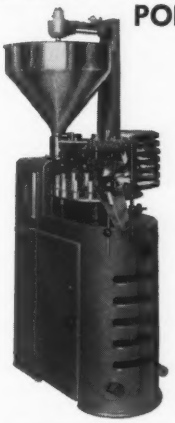

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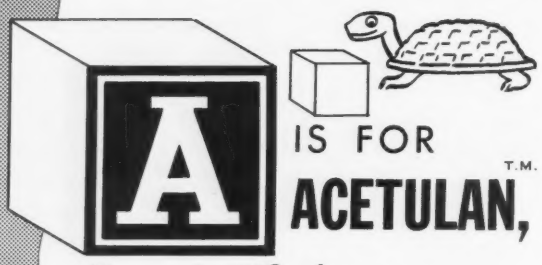

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Best spreading emollient
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ACETULAN is a 100% active, water thin lanolin derivative (viscosity 10 cps). It has phenomenal spreading and penetrating properties and imparts a unique soft waxy, emollient feel to skin and hair.

ACETULAN is composed of acetylated lanolin alcohols prepared by an exclusive process. It is soluble in alcohol, propellants, and in most oils. It acts as a solubilizer and plasticizer for many substances which are used in aerosols, emulsions, lotions, and make-up.

ACETULAN is hypo-allergenic and non-irritating.

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Aerosols	Ointments and lotions
Emulsions	Rouge and lipsticks
Shampoos	Liquid make-up
Powders, talcs	Baby products
Nail polish removers	Hair preparations
Sun tan oils	Shaving preparations

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resulted in over 60 issued patents on new compounds or processes, some of which have proved extremely useful and some which may prove useful in the future.

The work of Djerassi and Rosenkranz and their collaborators, including some of the best consultants that could be obtained at the universities, has made Syntex research appear at times almost like the tail that was wagging the dog. Despite the fact that they had for years been the largest basic producer of steroid intermediates, their production costs, because of research and administrative overhead, were extremely high. This undoubtedly contributed to the tension and conflicts which characterized Syntex' role in the steroid business. This tug of war between interests that would like to have seen Syntex confine itself to being the largest and most economical producer of steroid intermediates and those who wished to exploit fully the results of their research by lifting Syntex from the level of a bulk producer to enter into competition with its own customers for sale of finished products, now seems to be resolving itself. Enough of the syntex research products are now of therapeutic interest to enable Syntex to embark upon a new policy that should permit them to continue and expand their research while at the same time maintain their strength as a bulk producer and move forward also to direct activity as a pharmaceutical house. This new policy was signaled when, in 1956, Parke Davis announced that it had resolved its long feud with Syntex over the Marker patents by entering into a cross-licensing agreement; furthermore Syntex gave Parke Davis rights in the U. S. for Djerassi's superprogestin, 17-ethynyl-19-nortestosterone (NORLUTIN). Simultaneously, Parke Davis announced its entry into the cortical hormone field with prednisone and prednisolone which is produced for them in bulk by Syntex. Syntex followed this by licensing other companies elsewhere on their 19-nor compounds. This included Organon, CIBA and Schering (Berlin).

Syntex research had been traditionally weak in the biological exploration of its compounds, firstly because it was not a pharmaceutical house and had no biological staff of its own, and secondly, because the volume of new compounds coming from its chemical laboratories would have overwhelmed any reasonably sized organization. Steps have been taken to remedy this situation and through the use of expert consultants, Syntex is catching up with its biological potential. More than 18 compounds have already been through clinical trial and are in the process of new drug application and license negotiation. The present Syntex plan is to ready these drugs for market and license one or more pharmaceutical houses on a "share the profits basis." In each case, they also intend to reserve the right to market these products on their own and are thus serving notice that they intend to become a first line pharmaceutical house. Still to come are a long series of papers on cortical steroid work currently

Reader's Questions . . .

Cold Cream Problems: *The cold cream I am making according to an apparently standard formula nevertheless is giving me some trouble. Occasional batches turn out to be quite lumpy and granular instead of smooth. Can you offer suggestions to overcome this problem?* BROOKLYN

General causes for a granular cold cream are too high a proportion of beeswax, too much vegetable oil, too rapid cooling and poor stirring. In your case, I would look especially into the last two causes since your formula is not out of line.

A number of causes for other common problems in preparing cold creams may well be mentioned at this time. The problems are separation of water, too hard a product, too soft a cream and yellow discoloration of the cream. A cream will separate water when the water content is too high in relation to other components; when the proportion of wax is too high; when too little borax is used or saponification is incomplete; when insufficient of the emulsifying beeswax is present; if the saponification temperature or temperature of mixing is below 70°C.; if agitation is stopped too soon. Too hard a cream is caused by too small a proportion of oil or by too much wax. If hardness is caused by too rapid cooling, it is likely that the cream has broken down. A cream will be too soft with too little wax; with too much water; with too little borax or insufficient saponification; when saponification takes place at too low a temperature. Yellow discoloration will be caused by too little water; by poor quality ingredients or the use of yellow wax; superheating of the fats will cause discoloration; too much perfume or perfume of poor quality will cause a yellow color.

The use of poor quality borax may cause granularity because of the presence of calcium salts. So little of the alkali is used that it is not too expensive under any circumstances to use the chemically pure grade.

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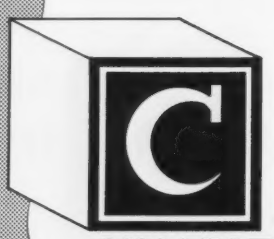

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Derived from lanolin,
Pure and free.

CHOLESTEROL — Our Cholesterol is U.S.P. quality and better. It is suitable for the most exacting purposes in pharmaceuticals and cosmetics.

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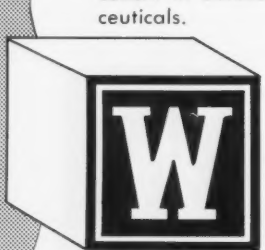
Best for sure.

VISCOLAN is liquid lanolin at its best — clear, free of objectionable odor and color, uniform in quality. It meets TGA specifications for liquid lanolin. VISCOLAN is oil soluble and excellent in aerosols, cosmetics, and pharmaceuticals.



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Adds gloss and stability,
Melting point raises.

WAXOLAN is a clean hard wax separated from pure lanolin. Use it as an emollient and for gloss, grooming effects, raising m.p. and viscosity.

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being done at Syntex. The advances foreshadowed by this research may go a long way toward helping Syntex achieve the last mentioned objective, that of full scale liberation from the limitations of its role as a producer of intermediates.

Searle—All of the above examples serve to show that research pays off, even though the approach may be different in each case. One thing that is common to all of the above experiences is that the investment was undertaken in each case to reach a real and concrete goal. Once this goal was achieved, it was not as difficult to follow this lead with further investment in research. Exactly the opposite is the case with G. D. Searle. This unique outfit can be said to have entered the steroid field from the back door and seems to be heading always in the opposite direction. Firmly convinced that contrariness is the key to success, Searle follows the policy of searching only for what the other fellow has not got. In so doing, Searle is adhering to the theory which helped make it one of the outstanding specialty houses in the pharmaceutical field. Back in the depth of the depression, Searle trimmed its full line pharmaceutical list from 400 drugs down to 20. This unprecedented move allowed the Searle sales and promotion efforts to be concentrated on these specialties with great success and created Searle's passion for specialty products. Concentration on this search for unique drugs yielded a succession of highly successful specialties whose sales volume have been the envy of Searle's competitors. When Searle turned its attention to steroids, the same approach was followed.

At first, they turned their attention to adrenal corticoids, but not with the intention of outproducing or outseling their competitors who were making cortisone. Instead, they allied themselves with the unique work being done by the biologists at the Worcester Foundation through giving strong support to this institution and availing themselves of consultation or advice from its leading members. The perfusion of steroids through beef adrenal glands held a peculiar fascination for Searle's Research Director, Dr. Albert Raymond, although it certainly did not look like a promising way to make corticoids. Nevertheless, Searle expanded its research facilities almost to the size of a miniature factory for a perfusion of steroids through adrenal glands and isolation and characterization of the products. In so doing, they produced the first reasonably large quantities of hydrocortisone for clinical testing and helped to establish its superiority to cortisone as a therapeutic agent. At the same time that they expended huge amounts of money on this hopelessly "uncommercial" means of production, they trained an expert crew of steroid biologists and developed exceptional technics for isolating and characterizing new steroid compounds. In dollars and cents, this gambit probably took more and paid off less than any other venture in the business, but what Searle learned about the biology of steroids only

served to whet their appetite for spending more money and looking in newer directions. Turning its back on the cortical steroid field, Searle set out to build one of the largest laboratories for studying the biological effects of steroids. Simultaneously, it built a crew of exceptionally good chemists who were assigned the job of creating novel steroid molecules and following any direction that this work would lead to. Nowhere, even to this day, can it be said that the Searle management ever received encouragement in the form of profits for this tremendously expensive undertaking, but the productiveness of Searle's steroid research and the number of areas in which they have broken new ground is overwhelming.

The first products of Searle research to reach the market, the anabolic NILEVAR and the progestin ENOVID, are close cousins to the Syntex 19-nor compounds, but are nevertheless exclusively covered by Searle patents. While these compounds are probably too new and too expensive to produce the sales or profits necessary to sustain the huge Searle research budget, there is litle doubt that these as well as other products of Searle research will pay off in the not too distant future. In addition to the anti-cancer and anti-fertility uses for which these compounds are intended, Searle has on hand hypotensive, diuretic and anti-atherosclerotic steroids which show tremendous potential. While Searle does not have too liberal a policy on publications, news of their progress is available via the Patent Office. For the last few years now, almost every week the Official Patent Gazette has revealed new structures patented by Searle with as yet unrevealed physiologic properties. If even a fraction of these prove to be useful drugs, then the Searle research approach will demonstrate that its greatest specialty is that of making profits.

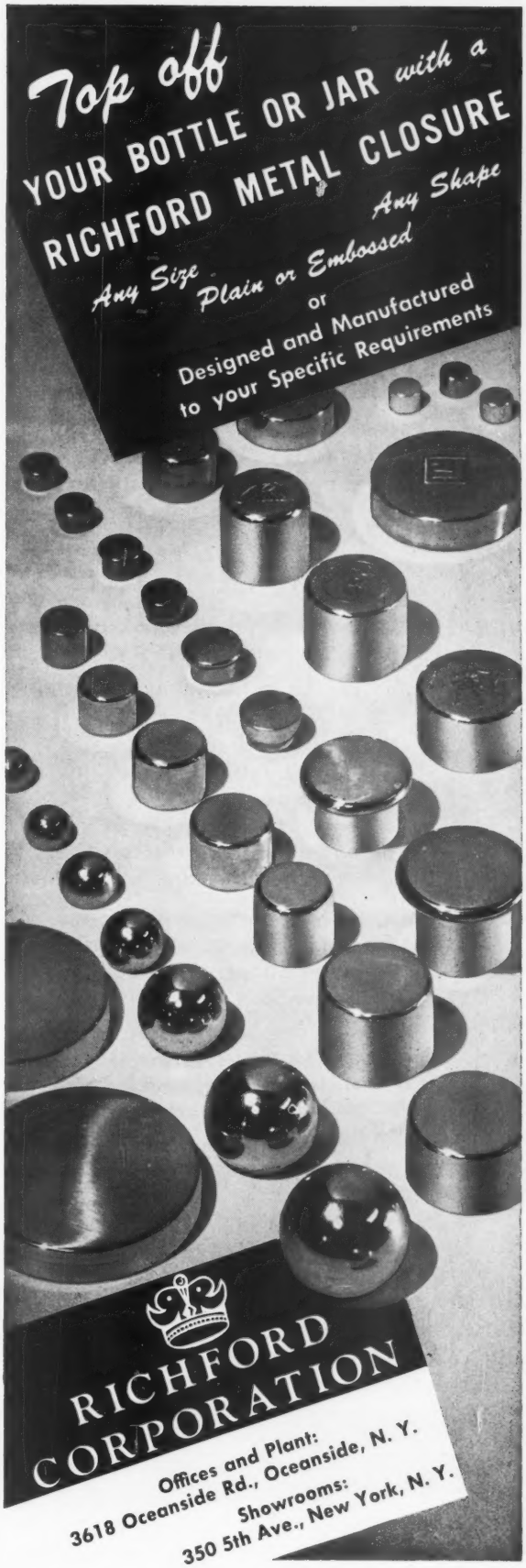
That the Searle management anticipates a profitable crop of steroid drugs is indicated by their recent acquisition of basic steroid production facilities in Mexico and Puerto Rico through their purchase of Productos Esteroides and Root Chemicals.

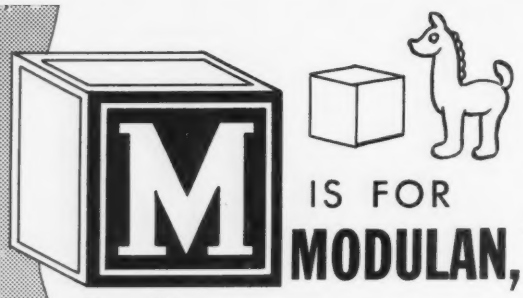
TGA MEETING

(*Continued from page 39*)

matters were settled by stipulation and 1,706 were disposed of by accepting assurance of discontinuance of claimed unlawful practices. This indicates a healthy balance of hard-hitting enforcement with sincere encouragement of voluntary law compliance. Above all, it suggests that the Federal Trade Commission is ready, willing and able to do the job entrusted to it by the Congress and the public.

An explosive growth in the teen-age market plus a much-needed re-reappraisal of the industry's theories regarding male toiletries are two of the major factors that will signal an unparalleled era for the toilet goods industry, said Richard Lockman, of Emil Mogul, Inc., advertising agency, in summing up as





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Emollient supreme,
For skin and hair
Works like a dream.

Yes, MODULAN is above all an emollient. It is lanolin, modified by acetylating the hydroxyl groups to gain extremely valuable new conditioning properties and effects when used on skin and hair.

(U. S. Patent No. 2,725,334 and foreign patents.)

MODULAN is hypo-allergenic and non-irritating.

Some of the outstanding characteristics of MODULAN ARE —

Oil soluble, hydrophobic
Substantive yet permeable films
Practically odorless
Soft-waxy, non-tacky protective films
Compatible with o/w emulsions
Compatible with soaps and foams

MODULAN is particularly recommended for use in creams, lotions, baby oils, hair preparations, shaving creams, cream shampoos, lipsticks and ointments.

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moderator of the Merchandising Panel. Crediting the pot-war baby boom of the late 1940's as a major factor in the industry's "unbridled optimism" for the future, he pointed to the fact that "little girls are now growing up to become the 12 million teen-age consumer market of 1965. And that's not to ignore the 12 million teen-age boys whose vast potential as a huge market for toiletries is only beginning to be realized."

Citing the 8.3 per cent increase in toiletries sales for 1957 over the previous year, Mr. Lockman asserted that the industry is advertising toward a recession-proof status where "only a major economic catastrophe can seriously deter our year by year upward surge."

The meeting of the Scientific Section of the TGA was held in New York at the Waldorf-Astoria Hotel on June 5. At the luncheon held on that day the CIBS Award of $500 was presented jointly to Dr. Donald H. Powers and Charles Fox, both of Warner-Lambert Pharmaceutical Company for their paper "A Study of the Effect of Cosmetic Ingredients, Creams and Lotions on the Rate of Moisture Loss from the Skin." The Award was presented by William L. Jaeger, president of the Cosmetic Industry Buyers and Suppliers Association.

EVALUATION OF THE INHALATION SAFETY OF COSMETICS

(Continued from page 43)

No. 2 shows a nebulizer for injecting an aerosol. The same type of setup would be used for injection of a gas; the gas could be stored in pressurized cylinders equipped with a suitable metering device to control the rate of injection into the air stream entering the chamber. Similarly, a suitable dust generating mechanism could be installed at the inlet of the chamber for injecting the proper amount of dust of a given chemical.

The concentration of the chemical in the chamber atmosphere can be readily controlled by varying either the rate of delivery of the test chemical to the air stream, or by varying the rate of air flow. Obviously, increasing the rate of delivery of test chemical to a constant air stream will increase the concentration of the test chemical in the chamber atmosphere. Alternatively, the injection of the test chemical can be held constant and the air flow reduced to likewise increase concentration of chemical in the chamber.

Inhalation Toxicology Studies

Having shown the physical setup for generating the artificial environment, let us review briefly the types of studies which are routinely employed for investigating inhalation toxicology. One classification could be on the basis of duration—whether acute, subacute, or chronic. Acute means a relatively short

exposure of several hours duration, subacute means a period from several days to several weeks, and chronic means several weeks to several months. The choice of duration of exposure will be dictated by the use of the chemical under study. In other words, if the use of a chemical is such that people would be coming in contact with it daily for long periods of time, it would be necessary to conduct chronic exposures in animals in order to estimate the hazard from this prolonged exposure. If, on the other hand, the person using the chemical came in contact with it for relatively short periods of time at widely separated intervals, acute studies are all that would be indicated for the adequate evaluation of toxicity. Subacute studies would be indicated for uses which fall between these extremes. In many cases, it is difficult to estimate accurately what the total duration of contact with a chemical may be. In these cases, it is usually best to perform long-term studies, or at least good subacute studies, in order to gain as much insight into the problem as possible. The reason for conducting chronic exposures, of course, is to rule out insidious toxicity. Familiar examples of this are carbon tetrachloride, from which delayed liver and kidney damage is observed, and benzene, which produces delayed effects upon the bone marrow.

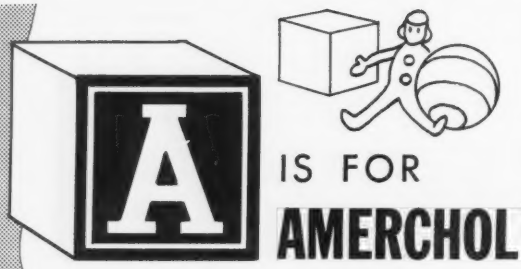
Another problem which confronts the inhalation toxicologist is the choice of animals so that the task of extrapolating the animal data to human toxicology will be simplified. There are no specific rules which can be laid down for this; usually it depends upon the experience and judgment of the toxicologist. A few examples should prove enlightening. It is known that the small rodents (mice, rats, and guinea pigs) are subject to respiratory infections and, hence, should not be used alone in evaluating the chronic inhalation hazard of a pulmonary irritant. In this case, a better choice of animal would be the dog. Another example is the evaluation of suspected histamine liberators (such as the diamines). Since the rat is known, from pharmacological testing, to be relatively resistant to histamine liberators, the use of rats may not give a true picture of the toxicity of the chemical. In general, several species of animals are incorporated into the study. From a practical standpoint, it is usually not economically feasible to use large animals, such as the dog, in the acute studies and nearly all of our acute data is on the smaller animals, such as mice, rats, guinea pigs, and rabbits. For longer exposures, both subacute and chronic, it is desirable to have larger animals, such as the dog, cat, or monkey, as well as the rodent.

In the subacute and chronic inhalation studies, it is imperative to follow the various organ functions in order to evaluate hazard specifically related to one or more organs, such as liver damage, blood dyscrasia, etc. This means that a battery of biochemical studies is required which will consist of blood analyses, urine analyses, liver function tests, kidney function tests, etc. Obviously, the choice of these biochemical studies will depend to a great extent upon the preliminary information gained from the acute, subacute, and other studies. Information on metabolic studies may be available or information may be available on related chemicals which may afford a good insight into the toxicological activity of the chemical under study. This knowledge will dictate the type of hematological and biochemical studies which should be performed. Obviously, the proper choice of these studies is of great importance; since they become expensive, it is mandatory to limit the total number of biochemical analyses consistent with an adequate appraisal of the toxicity of the chemical under study.

The safety of a chemical is frequently stated in terms of the maximum allowable concentration (M.A.C.). The M.A.C. is obtained from the chronic inhalation studies and is derived from the concentration which animals can inhale safely over long periods of time. The value for animals is reduced by a suitable safety factor for the establishment of the maximum allowable concentration which will be deemed safe for human exposure. A similar interpretation would, of course, be required in cosmetics but it is conceivable that the problem here could be of a more difficult nature because the materials would be used by individuals and there would be no control over the actual existing concentration as there may well be in a manufacturing plant. Hence, either an additional safety factor would have to be incorporated into the interpretation of the animal data or else the safety of the cosmetic would have to be evaluated by comparing its M.A.C. to the maximum theoretical concentration to which a human might be exposed.

Applications

How can these principles of inhalation toxicity be applied to inhalation problems in cosmetics? Certainly, no easy answer is available. There are certain obvious cases in which some inhalation hazard exists. These are primarily products which are operated from pressurized containers although certainly other materials, such as spray deordorants, spray perfumes, etc. could conceivably constitute some element of inhalation hazard. The necessity of performing inhalation studies may not be obvious from previous experience with a chemical by skin application. Nevertheless, when this same chemical is incorporated into a new formulation, and furthermore packaged in a pressurized container, it may be capable of producing serious damage via the inhalation route. It therefore becomes necessary to have a high index of suspicion and an appreciation of the hazards which may exist. An attempt has been made in the earlier part of this paper to outline the inhalation hazard potential, and I would again like to restate the fact that the area in



A IS FOR AMERCHOL®

A real dermal treat
Keeps skin youthful,
With moisture replete.

The AMERCHOLS head the list of skin moisturizing ingredients in use today —and with good reason. They are natural hydrophilic, non-ionic emulsifiers and surfactants derived from cholesterol and related sterols of pure lanolin origin.

Because of their unusual emollience and spreading characteristics, the AMERCHOLS are invaluable in make-up preparations as well as in creams, lotions, aerosols, baby toiletries, shaving preparations, hair products and ointments. The AMERCHOLS are hypoallergenic and non-irritating. They are soothing and safe for use on the most delicate tissues.

The AMERCHOLS are available in both liquid and solid forms.

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the lung is 25 times greater than the surface area of the skin; thus, the lungs constitute an extremely effective and rapid route for the absorption of chemicals.

Furthermore, the deposition of fine particles in the terminal (alveoli) portions of the lung can create problems completely different from the application of the same material to the skin; the surface area in the lung is essentially inaccessible and hence it cannot be washed in the same manner as the skin. In other words, if a chemical is applied on the skin it can usually be washed off; if it is taken into the lung and deposited in the alveoli it is impossible to remove. Fortunately, the lung has a very effective cleansing mechanism in the cilia which line the respiratory epithelium down in the terminal bronchioles. The beating of these cilia is extremely effective in carrying particles out of the lung. However, once particles are deposited in the alveoli, this mechanism of clearing is no longer available. Removal of particles from the alveoli must be by absorption or by enzymatic breakdown following engulfment by the macrophages. If the particles cannot be broken down, they may remain in the lung as in silicosis, or the particles are picked up by the macrophages and carried to the hilar lymph nodes. Recently there is strong evidence to believe that particles of polyvinylpyrrolidone are extremely difficult to handle. It appears that these particles are not broken down by enzyme systems, that they are picked up by the macrophages and carried to the hilar lymph nodes and may remain stored there for a long period of time. If large quantities of this chemical are carried to the lymph nodes, some may spill over and get into the systemic circulation via the thoracic duct and be carried to all organs of the body. As a result, inhaled particles can find their way eventually into all organs even though they are not directly or immediately absorbed from the lungs.

Estimating Human Hazard

How does one estimate the human hazard from animal data? There is no straightforward answer to this very serious problem. In performing the experimental inhalation studies, several species of animals should be used so that the data from the more susceptible species can be used in the extrapolation to human toxicity. This is based upon the sound concept that it is better to err on the side of safety, and to assume that man will react in a manner similar to the most sensitive species of animal tested. Other pharmacologic data are used to understand the action and fate of a chemical after entry into the blood stream. Histology of the exposed lung and other organs must be evaluated. Finally, the estimation of the human hazard must depend upon the utilization of past experience and skilled judgment by toxicologists, as well as the application of suitable safety factors.

(*Continued from page 45*)

Test Methods

Uniformity in test methods was of utmost importance in our program and the methodolgy was decided upon at the very beginning. Several different tests, to which each product was to be subjected, were made a part of our test procedures, the tests being as follows:

1—INITIAL TESTS

A. *Odor Evaluation*

Immediately upon the incorporation of the perfume oil into the finished toiletry, the odor was evaluated by a panel of perfumers. Similar evaluations were made one, three, six and twelve months after preparation of the test material.

B. *Performance Tests*

Perfume bases were tested with regard to compatibility, solubility, odor coverage, stability of emulsion, discoloration and other basic factors immediately after the incorporation of the perfume to determine whether or not any difficulties were caused by the fragrance blend. These tests were also continued periodically over a period of months.

2—ACCELERATED TESTS

One sample of each of the various toiletries prepared was subjected to an accelerated test in the oven for a period of one week at temperatures of 110°F. The test samples were examined daily and any changes in appearance which were found were recorded.

3—SHELF TESTS

A complete set of perfumed samples, as well as unperfumed controls, were kept on our shelves for a period of one year to determine what deterioration, if any, took place during normal shelf life. These results were correlated with results of accelerated tests. The samples were examined after one, three, six and twelve months.

During each evaluation of a sample by the panel of perfumers and cosmetic chemists, determination was made as to odor and stability of the emulsion. The samples were studied for any coloration or discoloration which might have been caused by the perfume compositions. Viscosity changes, if any, were noted and the entire sample was examined for any physical changes in the cosmetic base. The perfumed samples were also compared with the unperfumed controls.

Throughout the test procedures, newer cosmetic additives such as hormones, royal jelly and others, which might have adverse effects on the perfume compositions, were included in the cosmetic bases used.

For the testing of soaps, detergents, shampoos and related products, again using both individual perfume ingredients and blends, special tests were conducted. Cake soaps were tested for a period of one week at elevated temperatures of 140°F., and were also evaluated under ultra-violet conditions to determine the stability of the cake upon exposure to sunlight. The same cakes were held for a period of one year. The cakes were evaluated for odor stability and intensity as well as for visible coloration and discoloration of the soap base after one, three, six and twelve months.

Test Results

In the initial phase of our test program, literally hundreds of basic aromatic chemicals, essential oils and other individual perfume materials were evaluated, at various concentrations, in soaps and cosmetic bases. As a result of this evaluation, we were able to eliminate from use in blends to be made for a specific end product, any perfume ingredient which showed incompatibilities in that particular toiletry. The knowledge thus gained, coupled with data which we had gathered through years of compounding experience, enabled us to prepare over 2,400 perfume blends which were to be subjected to our test program in the various cosmetic and toiletry categories previously enumerated.

The results of our accelerated tests showed that this type of evaluation is not conclusive and that it cannot replace the longer actual shelf life test. 20 per cent of the blends which proved to be unsuitable after accelerated testing were found to be satisfactory after the shelf test. On the other hand, 30 per cent of the blends which showed good stability during the accelerated test broke down during the early stages of the shelf test and were, therefore, elminated from the final evaluation.

Of the final 2,453 perfume blends which were used in the actual tests in over thirty toiletries, 94 per cent proved to be completely satisfactory and 6 per cent broke down or caused other difficulties. Of the 1,074 aromatic materials tested in soaps, 76 per cent proved satisfactory and 24 per cent were not acceptable. Of the 76 per cent which were found to be satisfactory, more than 64 per cent were found to be suitable for white soaps and the remainder for soaps that were colored. 87 per cent of the materials tested in high pH detergents were found to cause no incompatibilities whatsoever.

The highest percentage of incompatibilities was found in astringent creams in which 14 per cent of the blends tested broke down. This was no doubt caused by the chemical action between the perfume and the metallic salts and other active ingredients. 12 per cent of the blends tested in hand lotions showed discoloration or other incompatibilities. 8 per cent of the blends were found unsuitable for solid deodorant colognes which might be attributed to manufacturing and formulation conditions as well as to possible reactions of the perfume with the active deodorizing ingredient.

Of the compounds tested in lipsticks, 4 per cent proved to be unsatisfactory. It was found that these unsuitable blends had a definite solvent effect on the

dyes and pigments resulting in the finished sticks having different color tones. In most of the other cosmetic media, we found good stability and odor retention in almost 100 per cent of the tests conducted.

We must repeat here that the high percentage of success achieved in the shelf testing of perfume blends was due to the pre-testing of individual ingredients in the various cosmetic bases. Without this pre-testing, countless numbers of blends would have been found unsatisfactory, necessitating almost complete re-formulation.

We must also mention the importance of the time and method of perfume incorporation. A fully compatible blend can, if incorporated at the wrong time or with an improper method, cause incompatibilities in the finished cosmetic. If high temperatures are present during the incorporation, the delicate perfume oils which are unable to withstand the heat will break down. Proper dispersion must also be considered in order to obtain a homogeneously perfumed product.

Conclusion

The results of our continuing test program have proved without a doubt the place that such tests have in the development of new cosmetic products. Proper testing and evaluation of perfume blends in the cosmetic preparation can effectively reduce the frequency of incompatibilities which are experienced during normal shelf life.

We have also learned that in order to avoid incompatibilities of any tpe, the individual perfume ingredients and blends to be used in a finished cosmetic must be shelf tested in the medium involved for a period of at least nine to twelve months. The accelerated test, although helpful, is by no means conclusive and the utilization of data obtained as a result of this type of testing will not always prove to be accurate. These conclusions have been shown to be correct by the results of our test program in which an extremely low incidence of incompatibilities was experienced due to the use of fully shelf tested aromatic ingredients.

CHEMICAL INTERACTIONS OF THE WATER-SOLUBLE VITAMINS

(Continued from page 48)

Thiamine—Riboflavin

Gambier and Rahn[15] have studied solutions containing thiamine and riboflavin at pH 4.5. They noted that the thiamine was oxidized, forming a precipitate which was identified as *thiochrome*. Formation of thiochrome was favored by increasing the ratio of riboflavin to thiamine, and by increasing the volume of air over the solution.

When the concentration of thiamine was high in relation to that of riboflavin precipitation of thiochrome was followed later by precipitation of *chloroflavin*, a reduction product of riboflavin.

B_{12}—Ascorbic Acid

In 1949 Gakenheimer and Feller[16] reported their observation of a pronounced incompatibility between vitamins B_{12} and C. Solutions containing 15 μg. per ml. of B_{12} and either 10 or 50 mg. per ml. of ascorbic acid showed more than 50 per cent decomposition of the B_{12} after 24 hours' storage at 28-30°. Soon after, Trenner *et al.*[17] made the important observation that pure crystalline vitamin B_{12} (cyanocobalamin) was relatively stable toward ascorbic acid, while B_{12_A} (hydroxycobalamin) was very unstable. B_{12} lost only about 1.5 per cent of its activity per day at room temperature, while B_{12_A} was almost completely destroyed in 1 day. Loss of activity was accompanied by a loss in color of the B_{12}. The reaction was slowest at pH 0-1, increasing in rapidity to a maximum at pH 7. The solutions of Gakenheimer and Feller had contained a tremendous excess of vitamin C, but Trenner *et al.* reported equally rapid decomposition with only 2 moles of C per mole of B_{12_A}.

It was discovered later that copper ions greatly enhance the destructive action of ascorbic acid on B_{12}[18]. Copper alone did not reduce B_{12} activity, but in the presence of ascorbic acid, as little as 0.1 part per million of Cu^{++} caused appreciable destruction. Manganous, molybdate, and fluoride ions had a similar effect, but to a much smaller extent. Cobalt, magnesium, ferrous, zinc, and iodide ions had no effect, either separately or in combination with ascorbic acid.

Frost *et al.*[19] studied the differential stability of various analogs of cobalamin to vitamin C. Their studies indicated that those B_{12} analogs in which the cobalt atom is strongly coordinated are the most stable toward ascorbate. It was also shown experimentally that ascorbate actually releases cobalt from less strongly coordinated B_{12} analogs such as hydroxycobalamin. More recent studies have shown chloro-, nitro-, and thiocyanato- cobalamins to be very unstable toward ascorbic acid[20].

The work of Bartilucci and Foss[21] indicated that decomposition products of ascorbic acid may play an important part in that vitamin's action on B_{12}. This was of interest in connection with the previously mentioned report of the synergistic effect of copper, since copper has long been known to catalyze oxidation of ascorbic acid.

Rosenberg[22] studied the kinetics of the copper-promoted decomposition of vitamin B_{12} in solutions of ascorbic acid. It was learned that Cu^{++} in itself has no effect on vitamin B_{12}, and that ascorbic acid in the complete absence of Cu^{++} causes relatively little decomposition. Distilled water, however, was found to contain about 0.5 part per million of Cu^{++} and this, in the presence of ascorbate, is sufficient to enhance the breakdown of vitamin B_{12}.

Further, it was found that Cu^{++}, in the presence of ascorbate, will promote the decomposition of a molar equivalent of B_{12}. This limitation implies that Cu^{++} is here non-catalytic, but undergoes reaction and inac-

tivation. Experimentally, when Cu^{++} was heated with ascorbic acid, its capacity to promote decomposition of *subsequently* added B_{12} was greatly reduced. Copper was similarly inactivated by heating with dehydro-ascorbic acid, the primary oxidation product of ascorbic acid.

Another interesting observation was that copper plus dehydro-ascorbic acid were also capable of decomposing vitamin B_{12}.

Evidence was also obtained that the decomposition products of B_{12} in ascorbate solutions are similar whether copper is present or absent. A small proportion of material was isolated whose microbiologic activity, distribution properties, and absorption spectra were similar to those of the cobalamins in which the cobalt is bound by a weaker coordination group than cyano. Presumably, these products decompose further by the loss of cobalt.

Rosenberg formulated the decomposition of B_{12} by copper and ascorbate as a three-stage reaction:
(a) Cu^{++} + ascorbic acid or dehydroascorbic acid $\longrightarrow$ x
(b) x $\longrightarrow$ Y + inactivated copper ion
(c) Y + B_{12} $\longrightarrow$ cobalamin-like intermediates which decompose.

Obviously, even after this valuable work, the nature of the reaction remains only imperfectly known.

Recently, Bartilucci *et al*[23] contributed the finding that dehydroascorbic acid causes decomposition of B_{12} at 40°, some of the breakdown occurring almost instantaneously. No reference was made to the possible presence of copper. Glass-redistilled water was employed, but no analysis for copper was reported. Rosenberg[22] had further purified his distilled water by means of a cation exchange resin.

B_{12}—Thiamine plus Niacinamide

Five years after the B_{12}-ascorbic acid incompatibility was first reported, Blitz *et al*[24] were surprised to find large losses of B_{12} activity in various marketed B-complex injectables containing no ascorbic acid. Having eliminated solubilizers and rubber vial stoppers as possible causes, they investigated each of the individual vitamins and found that deletion of either thiamine or niacinamide from the formulation resulted in greatly increased B_{12} stability. (Riboflavin, pyridoxine, and panthenol were found to be compatible with B_{12}).

Using accelerated decomposition tests, these workers found that in 4 hours at 100° niacinamide effected a slight decomposition of B_{12}, and thiamine effected considerable decomposition. At 45°, neither vitamin induced significant decomposition in 3 weeks. The combination of thiamine and niacinamide, however, effected complete decomposition of B_{12} at 100° and very considerable decomposition at 45°. The same results were obtained in the presence of either air or

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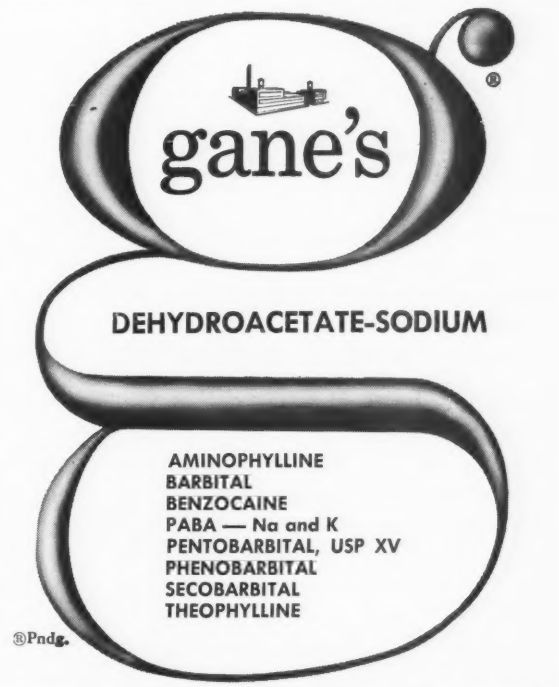

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nitrogen, showing that oxidation is not a factor in this reaction.

Macek and Feller[25] soon confirmed the findings of Blitz *et al*, but pointed out that at room temperature crystalline vitamin B_{12} is stable in aqueous B vitamin solutions for long periods of time. These authors subsequently showed that decomposed thiamine was more active than thiamine in breaking down B_{12}[26]. The two best-known breakdown products of thiamine were tested. The pyrimidine moiety proved to be harmless, but 4 methyl-5-β-hydroxyethyl thiazole was strongly active in decomposing vitamin B_{12}. These reactions all required elevated temperatures, the solutions being perfectly stable at room temperature. Continuing their studies on B-complex injectables, Blitz, Eigen, and Gunsberg[27] found significant to complete loss of B_{12} on storage at room temperature. These preparations were quite concentrated with respect to thiamine (10 to 90 mg./ml.) and niacinamide (50 to 100 mg./ml.). The authors found that at lower concentrations of thiamine and niacinamide, in the range of 1 to 10 mg./ml., losses of B_{12} after a year at room temperature were more moderate (0-17 per cent). Thus B complex elizirs which usually contain 2 to 10 mg. of thiamine per 5-ml. dose can retain their B_{12} activity even after 12 to 24 months, at room temperature.

These authors confirmed the previous report[26] that the thiazole moiety of thiamine decomposes B_{12}; but they found also that the thiazole is not responsible for *all* of the B_{12} destruction. Niacinamide plus thiamine gave greater decomposition of B_{12} than niacinamide plus thiazole, indicating that a second factor exists which causes further degradation of B_{12}.

Perhaps the most significant experiment of Blitz *et al*[27] was that in which thiamine and niacinamide were heated together in solution at pH 4.25. This solution effected decomposition of vitamin B_{12} with extreme rapidity. It was thus shown that niacinamide acts upon thiamine to form one or more compounds incompatible with vitamin B_{12}. It was further shown by these authors that pyridine itself, the basic ring structure of niacinamide, does this also. It is *a propos* to note that back in 1944 McIntire and Frost[28] reported that thiamine is decomposed by niacinamide and nicotinic acid.

Again, while progress has been made on the clarification of this interesting incompatibility, much remains to be learned of the reaction between niacinamide and thiamine, as well as the reaction between thiamine and B_{12}. The question suggests itself as to whether the mode of action of the thiazole moiety is similar to that of ascorbic acid—that is, a "loosening" of the cobalt atom from its coordinated position in the molecule. This hypothesis is suggested because other sulfur compounds—sodium thioglycolate, cysteine, thiomalic acid, and thiosorbitol—have been shown to destroy hydroxycobalamin more rapidly than cyanocobalamin[19], as does ascorbic acid.

It is also of interest that while the pyrimidine and thiazole moieties of which thiamine is composed have been tested for possible action on B_{12}, the best-known oxidation product of thiamine, *thiochrome*, has apparently not been tested. Might thiochrome be the "second factor" postulated by Blitz, Eigen and Gunsberg[27]?

Stabilization of Vitamin B_{12}

Patents have been issued relating to the stabilization of B_{12} toward other vitamins in aqueous solution. Organon[29] treated a solution of B_{12} concentrate (20 μg. of B_{12} per ml.) with 0.2 mg. per ml. of HCN at pH 6. After 2 hours, excess HCN was removed by passing nitrogen through the solution. After restoring evaporated water, ascorbic acid was added at a concentration of 20 mg. per ml. This solution was claimed to be stable for 6 days at room temperature, whereas an untreated B_{12} solution was inactivated in 3 hours.

Winsten[30] employed "cooperating stabilizers" in a solution containing thiamine and ascorbic acid as well as B_{12} at pH 5. The stabilizers used were cysteine hydrochloride, sodium copper chlorophyllin, and Tween 20—the last—named comprising 25 per cent by volume of the solution.

Mukherjee and Sen[31] made the interesting observation that ferric chloride, 0.25−0.50 mg. per ml., protected B_{12} against the action of thiamine and niacinamide in an accelerated storage test of 4 hours at 100°.

Other Reactions

Other interactions between vitamins have been noted which have not been studied or described in the literature.

Brumfield and Gross[14] found that calcium pantothenate destroyed riboflavin at pH 3.5 to 6.0, with formation of a copious precipitate. Panthenol, on the contrary, had no deleterious effect.

A reaction between choline salts and ascorbic acid, manifesting itself in color formation, has been noted by the author. It appears, from personal communications, that the occurrence of such a reaction is known to others in the industry.

A reaction between two oil-soluble vitamins, A and K, has been found to occur. In oil-base capsules, menadione exerted a destructive effect on vitamin A palmitate[32]. In this connection it may be suggested that menadione and ascorbic acid are a likely pair to interact by oxidation—reduction. However, no report of such a reaction has been found.

SUMMARY

The literature dealing with the chemical reactions between various members of the water-soluble group of vitamins has been surveyd. The chemistry of these reactions has been discussed to the extent of the information available. In some cases, suggestions for

further work have been offered.

The known reactions may be summarized briefly as follows:

1. Niacinamide undergoes complex formation with riboflavin, folic acid, and ascorbic acid. In no case is decomposition of either vitamin involved.
2. Niacinamide (and also niacin) causes decomposition of thiamine by an unknown mechanism.
3. Thiamine reacts with riboflavin, folic acid, and B_{12}.
4. Riboflavin acts as an oxidizing agent upon thiamine, folic acid, and ascorbic acid. It acts also as a photosensitizer and hydrogen acceptor, catalyzing the photolytic oxidation of folic acid and ascorbic acid by visible light.
5. Ascorbic acid decomposes folic acid and B_{12}, and is capable of reducing riboflavin.
6. Calcium pantothenate decomposes riboflavin and folic acid. Neither of these reactions has been studied.
7. Folic acid is decomposed by thiamine, riboflavin, ascorbic acid, and calcium pantothenate.

   In the reaction with ascorbic acid, folic acid is cleaved at the active methylene group, forming *p*-aminobenzoylglutamic acid. The aromatic amino group of the latter is then destroyed by further reaction with ascorbic acid or its oxidation products.

   In the reaction with riboflavin, folic acid undergoes oxidative cleavage forming *p*-aminobenzoylglutamic acid and a pteridine aldehyde.
8. Vitamin B_{12} is decomposed by ascorbic acid and its oxidation products with the eventual formation of uncoordinated cobalt. A trace of cupric ion is required for this reaction.

   Vitamin B_{12} is decomposed by thiamine and by a combination of thiamine and niacinamide. In either case decomposition products of thiamine are responsible, the thiazole moiety being the one implicated.

By now the reader may have formed the impression that a stable liquid multivitamin is an impossibility. This is not the case, as stable vitamin combinations may be prepared by various methods. These include: the use of stabilizers, the use of various concentrated syrups as vehicles, exclusion of air and light during manufacture and storage, and the dispensing of lyophilized dry vitamin mixtures which are reconstituted just before use.

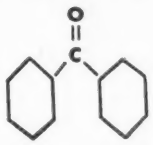
The importance of the chemical interactions between vitamins has thus far been recognized in the fields of Pharmacy and dairy science, and to a minute degree in bacterial biochemistry. It is felt, however, that these reactions have received inadequate attention in many of the scientific fields which they affect.

REFERENCES

1. Taub, A., and Lieberman, H., **J. Am. Pharm. Assoc. (Sci. Ed.)**, 42, 183 (1953).

(*Continued on page 118*)

Benzophenone



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2. Fox, S. H., and Opferman, L. P., U. S. 2,433,688 (Dec. 30, 1947).
3. Biamonte, A. R., and Schneller, G. H., **J. Am. Pharm. Assoc. (Sci. Ed.)**, 40,313 (1951).
4. Koft, B., and Sevag, M. G., **J. Am. Chem. Soc.** 71,3245 (1949).
5. Koft, B. W., Sevag, M. G., and Steers, E., **J. Biol. Chem.**, 185,9 (1950).
6. Scheindlin, S., and Griffith, I., **Am. J. Pharm.**, 123, 78 (1951).
7. Scheindlin, S., Lee, A., and Griffith, I., **J. Am. Pharm. Assoc. (Sci. Ed.)**, 41,420 (1952).
8. Tansey, R. P., and Schneller, G. H., **ibid.**, 44,34 (1955).
9. Tansey, R. P., and Schneller, G. H., U. S. 2,731,390, (Jan. 17, 1956).
10. Hopkins, F. G., **J. Soc. Chem. Ind.**, 56,934 (1937).
11. Hand, D. B., Guthrie, E. S., and Sharp, P. F., **Science**, 87,439 (1938).
12. Kuhn, R., and Strobele, R., **Ber.**, 70,753 (1937).
13. Siemers, G. F., **Drug and Cosm. Ind.**, 69,318 (1951).
14. Brumfield, P. E., and Gross, H. M., **ibid.**, 77,46 (1955).
15. Gambier, A. S., and Rahn, E. P. G., **J. Am. Pharm. Assoc. (Sci. Ed.)**, 46,124 (1957).
16. Gakenheimer, W. C., and Feller, B. A., **ibid.**, 38,660 (1949).
17. Trenner, N. R., Buhs, E. F., Bacher, F. A., and Gakenheimer, W. C., **ibid.**, 39,361 (1950).
18. Stapert, E. M., Ferrer, E. B., and Stubberfield, L., **ibid.**, 43,87 (1954).
19. Frost, D. V., Lapidus, M., Plaut, K. A., Scherfling, E., and Fricke, H. H., **Science**, 116,119 (1952).
20. Hutchins, H. H., Cravioto, P. J., and Macek, T. J., **J. Am. Pharm. Assoc. (Sci. Ed.)**, 45,806 (1956).
21. Bartilucci, A., and Foss, N. E., **ibid.**, 43,159 (1954).
22. Rosenberg, A. J., **J. Biol. Chem.**, 219,951 (1956).
23. Bartilucci, A. J., Di Girolamo, R., and Eisen, H., **J. Am. Pharm Assoc. (Sci. Ed.)**, 47,42 (1958).
24. Blitz, M., Eigen, E., and Gunsberg, E., **ibid.**, 43,651 (1954).
25. Macek, T. J., and Feller, B. A., **ibid.**, 44,254 (1955).
26. Feller, B. A., and Macek, T. J., **ibid.**, 44,662 (1955).
27. Blitz, M., Eigen, E., and Gunsberg, E., **ibid.**, 45,803 (1956).
28. McIntire, F. C., and Frost, D. V., **J. Am. Chem. Soc.**, 66,1317 (1944).
29. Organon, N. V., Brit. 692,968 (June 17, 1953).
30. Winsten, W. A., U. S. 2,662,048 (Dec. 8, 1953).
31. Mukherjee, S. L., and Sen, S. P., **J. Pharm. Pharmacol.**, 9,759 (1957).
32. "Vitamin A Acetate and D_2 Powders," booklet issued by Hoffmann-La Roche, Inc., 1954, p. 20.

THE INVISIBLE SELL AND THE PHARMACEUTICAL INDUSTRY

(*Continued from page 53*)

station which carried the two-hour program as a public service has said that it received unprecedented public, as well as physician, approval. Many pharmaceutical companies were contacted by the station in advance of the program to see if some of the costs could be defrayed in return for a public service announcement. None of the companies contacted agreed to sponsor the program.

The difficulty that a pharmaceutical company faces in deciding to tell the public *anything*, revolves around the axiom: "Physicians resent any publicity about drugs that gets into the public's hands." From this has come the fear of antagonizing the doctor-customer so "when in doubt, do nothing" seems to be the answer of many companies to public relations suggestions. From a public relations standpoint, the avoidance of a problem is about the worst of all possible attempts at its solution.

Surely one area the drug industry can honestly relate to the physicians' problems is medical education. At this time, as any doctor will tell you, there are too few practicing physicians. Our ratio of doctors to population is 1:760. In Russia it is now 1:600. By 1975 we will have an estimated 225 million population. Unless the 84 medical schools in this country do something to increase the annual graduating class of 7,400, we will be short about 2000 physicians by 1975. The pharmaceutical industry has a vested interest in this problem and may accomplish a great public relations objective by doing something to help our future physicians, who are also its future customers.

An article in "Harper's" (October 1957) reported that it cost one man $36,803.90 for his son to receive medical training. Perhaps this is the place for the pharmaceutical industry to accomplish something for its personal esteem and for humanity. Some companies do make scholarships available to young men interested in medicine, but there is room for many more. The general public as well as established physicians and educators would applaud anyone who did this.

The Pharmaceutical Manufacturers' Association will undoubtedly appoint a public relations committee to help inform the public about the contributions of the industry. Health News Institute is well on its way to seeing that all information gets to writers and the public. Again, it is still vital that each company do its share and more than its share in seeing that the story of our business is told, retold, and then told again.

A good lesson in public relations can be had by studying the ten top health charities in this country. They raised over $145 million last year. Remember, every dollar means that someone was interested enough to give to the charity.

HEALTH CHARITIES

Disease	1956 $ Raised (Est.)	No. of Cases (Est.)
Polio	$54,700,000	1,000,000
Cancer	27,000,000	1,700,000
TB	25,560,000	250,000 (Active)
Heart Disease	17,750,000	9—10,000,000
Cerebral Palsy	8,520,000	570,000
Muscular Dystrophy	3,266,000	100—200,000
Rheumatism & Arthritis	2,130,000	10,104,000
Multiple Sclerosis	1,988,000	250—300,000
Mental Illness	3,000,000	725,000 (In mental hospitals)
Alcoholism	142,000	4,000,000

The able administrators of these organizations know that the American people are vitally interested in their health and are eager to contribute to the search for cures once they are alerted to the facts. These organizations tell their stories through every available means, often and well, through effective public relations. With a long-range, well-thought-out public relations program, each company making up the pharmaceutical industry can also win the alliance of the public.

On the highest plane, observing all the ethics of the industry, management can successfully enter the field of public relations. There need be no stigma, no shabby sensationalism associated with this tool of communication. On the contrary, we can combat our detractors by using effective public relations.

What a Company Can Do About Public Relations

Once a company decides to use public relations, a suitable individual may be hired to head up a Public Relations Department, or someone in the company may be assigned to public relations. This step can be by-passed by smaller companies by securing the services of an accomplished public relations adviser or specialist in pharmaceutical public relations. It is al-

ways necessary, no matter which method is used, for one individual of a company to be appointed as liaison and spokesman. This is often the president of the company if there is no full-time public relations director.

The company must then decide what there is to be done in this area. A comprehensive plan, set up in terms of a year or more, should be worked out with specific objectives, and specific methods of arriving at them.

It is often a good idea to hire the services of a market research organization or an expert in opinion analysis to study what the outside world thinks of the company. Often this sort of an investment will pay off handsomely in time saved and direction defined.

A serious attempt should be made to coordinate the entire operation of the company so that it is public-relations-oriented. Consideration must be given to the attitudes of suppliers, the community, and employees, to advertising, to stockholder relations, to relations with physicians, and to the reputation the company holds with federal agencies.

The best place to start a public relations program is within the plant. From there, moving to the employees' wives, then to the community, the town, and the state can come as natural steps in the progression. After understanding has been achieved on the local and state level, the customers of the company can be reached.

Many companies do not know that their telephone operator is probably one of the most important individuals in the public relations picture. She reaches thousands of people every year via her voice, and to them she symbolizes the image of the company. Receptionists, truck drivers, and of course salesmen, all contribute to forming the image.

As soon as the "family" is oriented, then a relationship with the press should be established. Certain local and national reporters should be met by top management and oriented towards the company's problems and products. It is very helpful if a newspaperman knows who to call if there is a fire at the plant, or if information on a top secret new drug has "leaked." This can often spell the difference between a sympathetic, accurate account of the drug, instead of a slanted article which could hurt the company.

The facts cannot be denied. We are all partners in a large, successful industry. Things never were so good. But with our success and our great accomplishments has come public awareness. Large numbers of people are beginning to read prescriptions and ask questions. With public and governmental awareness will come more and more inquiries into the very nature of our business. Now is the time for each company as well as the industry to organize in depth, programs of public information on all levels.

Physicians, pharmacists and consumers are interested in what the billion dollar American pharmaceutical industry is doing. Their questions should be anticipated and answers should be supplied even before the questions are asked.

No large industry can claim any higher sense of ethics or trace any longer period of public serivce. The story of the continuing efforts of this industry is the heart of any public information program.

PATENT THOUGHTS AND TRENDS

(*Continued from page 67*)

compounds in polyvinyl alcohol is, in general, not sufficient for a roentenogram of satisfactory contrast to be obtained. The rate of absorption of polyvinyl alcohol from hollow body organs is slow and because of this there is frequently some undesirable tissue reaction when this material is used as a solvent for radiopaque substances. Polyvinyl alcohol is particularly irritating in the peritoneal cavity and its use is accompanied in a great number of instances with pelvic clamps and pain in cases of patent tubes.

According to the patent, roentenograms of high contrast and clear outline are obtained and the contrast medium is readily absorbed from the hollow body cavities and excreted without irritation, tissue reaction or pain. It is claimed that the radiopaque formulations are especially suitable for use in uterosalpography as the roentenograms show in the uterus the extent of uterine lumen, the presence of benign tumors, fundal cancer, myomata, and papillomata.

RECENT PATENTS

2,818,365, -6, -8 — Monsanto — Destroying Nematodes with Thioalkylamines, Haloalkyl Phosphonic Dihalides and Phosphonium Halide.

2,818,369—Sterling Drug—Anesthetic Solution for Intraspinal Injection.

2,818,370—Abbott Labs.—Animal Feed Containing P-Aminoarsenosobenzene.

2,818,371—Sterling Drug—Fluoride-Containing Dentifrices.

2,818,408—Upjohn—Steroids.

2,818,425 — May & Baker (England) — 4-(Chlorophenoxy) Valeric Acids.

2,819,200, -1—Merck—Microbial Oxygenation of Steroids in the 21 Position.

2,819,264—Schering—Steroid Intermediates.

2,819,267 — Geigy — Anti-Fungae Dicarboxylic Acid Hydrazide Derivatives.

2,819,269—Abbott Labs.—Carbalkoxy Piperazines.

2,819,271—Upjohn—Methyl Reserpate O-Triacetylshikimate.

2,819,276—G. D. Searle—3, 19-Dihydroxy-4-Androsten-17-One.

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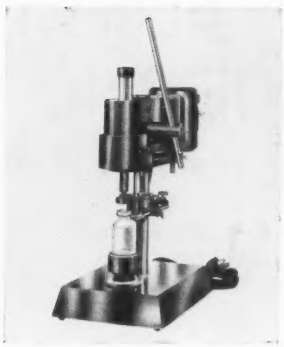

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ADVERTISING INDEX

American Aromatics, Inc. 115
American Cholesterol Products, Inc. 106, 108, 110, 112
American Sterilizer Co. 84
Anchor Hocking Glass Co. 64-65
Archer-Daniels-Midland Co. 30
Arenco Machine Co. 102
Avon Products, Inc. 16

Baker Chemical Co., J. T. 80

Camilli, Albert & Laloue, Inc. 122
Carr-Lowrey Glass Co. 62
Cavalla, Inc., A. 121
Charabot & Co., Inc. 26
Clintbrook Chemical Co., Inc. 102
Colonial Applicator Co. 60
Colton Co., Arthur 82
Continental Can Co. ....50, Facing 66
Continental Oil Co. 23
Crown Cork & Seal Co., Inc. ....Facing 67

Delta Chemical Works 121
Deutsche Hydrierwerke GmbH 20
Devold Oil Co., Peder 102
Distillation Products Industries 78
Dodge & Olcott, Inc. 28
Dow Chemical Co., The 18-19
Dow Corning Corp. ....Bet. 32-33
Dragoco, Inc. ....Bet. 8-9
Drug & Cosmetic Catalog—1958-59 Edition 24
Durlin Co. ....Facing 25

Eastman Chemical Products, Inc. 95
Emulsol Chemical Corp. ....Facing 74
Encapsulations, Inc. 102
Ertel Engineering Corp. 96

Fairmount Chemical Co., Inc. 121
Felton Chemical Co., Inc. 6
Firmenich, Inc. ....Facing 16
Fisher Chemical Co., Inc. 117
Florasynth Labs., Inc. 17
Forest Drug Products Co. 121

Gane's Chemical Works 115
Givaudan-Delawanna, Inc. 68
Glycerine Producers Association 11
Gross & Co., A. 9

Harchem Div., Wallace & Tiernan, Inc. 101
Haring Equipment Corp. 105
Hoffmann-La Roche Aromatics Div. ....Bet. 90-91
Hoffmann-La Roche, Inc. 1, 70
Hotel Jefferson 105
Huisking & Co., Charles L. 102

Ising Corp., C. E. 121

Knox Glass, Inc. 54
Kohnstamm & Co., H. ....Facing 24
Kolar Labs., Inc. 21

Lambert Engraving Co. 56
Lautier Fils, Inc. 13
Lueders & Co., George 10

Mallinckrodt Chemical Works ....Facing 33
Maryland Glass Corp. ....Facing 59
Mathieu, Inc., Charles 105
Merck & Co., Inc. ....Facing 17
Metalsmiths Div. of Orange Roller Bearing Co. 105

National Aniline Div., Allied Chemical Corp. ....Facing 32
New Jersey Zinc Co., The 107
New York Quinine & Chemical Works ....Bet. 32-33
Norda Essential Oil & Chemical Co. ....Cover 2
Nysco Labs., Inc. 121

Orbis Products Corp. 76
Owens-Illinois Glass Co. 52

Penick & Co., S. B. ....Facing 75
Pennsylvania Refining Co. 12
Pfaltz & Bauer, Inc. 121
Pfizer & Co., Inc., Charles ....Cover 4
Polak's Frutal Works 72

Reheis Co., Inc. 5
Richford Corp. 109
Ritter & Co., F. 96
Rohm & Haas Co. 7

Sheffield Tube Corp., The ....Facing 58
Sonneborn Sons, Inc., L. 8
Standard Pharmacal Co. 117
Sterwin Chemicals, Inc. 3
Stokes Corp., F. J. 88-89
Synfleur Scientific Labs., Inc. 81

Tevco, Inc. ....Facing 8

Ultra Chemical Co. 95
Ungerer & Co. ....Cover 3
Upjohn Co., The ....Facing 9
U. S. Bottlers Machinery Co. 86
U. S. Industrial Chemicals Co., Div. of Nat'l Distillers & Chemical Corp. Bet. 98-99

van Ameringen-Haebler, Inc. 14-15
Van Dyk & Co., Inc. 22
Verona Chemical Co. 92
Vitamerican Oil Corp. 96

Wallace & Tiernan, Inc. 101
Welch, Holme & Clark Co. 96
Will & Baumer Candle Co., Inc. 4